H.E.B.R

Hasanuddin Economics and Business Review 05:2 (2021) 45–53

The Impact of Geo-Spatial Distribution of Markets on Household Travel Patterns in Akure Metropolis, Nigeria

Musilimu Adeyinka Adetunji[a,*]

[a]*Department of Geography, Faculty of Social Science Federal University Lokoja, Kogi State, Nigeria*

Abstract

This study examines the spatial distribution of markets and its impact on household travel patterns in Akure, Nigeria. Both primary and secondary data were utilized for the research. The coordinates of locations of markets were obtained using a hand held Geographical Position System (GPS). A structured questionnaire was designed to elicit information on household travel patterns. Using descriptive and inferential statistics, the findings reveal that market is randomly distributed. A linear association exits between distance travel to market and household mode choice of transportation and it is significant at 0.05%. Inadequate transport services and traffic congestion are problems faced by households in Akure on their trips to markets. The study concludes that more periodic or daily markets should be provided in some localities that do not have in Akure and similar other cities in Nigeria.

Keywords: daily market, patronage, gender, distribution, planning

1. INTRODUCTION

In the last four decades, the high rate of urbanization in both the developed and developing world has resulted in inadequate provision of socio-economic facilities such as schools, health care services, and markets, in particular, that facilitate economic development of any geographical region of the world.

Inadequate access to these urban services creates a lot of bottlenecks which include long-distance trips, high dependency on automobiles, traffic congestion, and road traffic crash as a result of poor planning and uncoordinated transport systems (Adetunji and Aloba (2018); Adeyinka et al. (2016); Kompil et al. (2019); Williams and Kopnina (2012)). To avert some of these challenges facing urban centers and promote sustainable city living in many countries, governments in different countries of the world have instituted a series of urban developmental policies to improve the accessibility of the urban populace to basic socio-economic facilities.

Some of these policies include: mix land use policy to reduce long-distance trips; encourage mass transit for intra-city movement rather than rely on a car trip; encourage walking and cycling and strict compliance with planning regulations without political or societal influence (Ogunsanya (2004); Adeyinka et al. (2016); Banister (2008); Bertolini (2005); Curtis (2008), Ferreira et al. (2012)).

The introduction of regional development planning was witnessed in first-order cities like Lagos, Ibadan, and Port Harcourt in the early parts of the 1950s (Jelili et al., 2008). However, many medium-sized cities in Southwestern Nigeria grow organically without any form of planning regulation (Ogundahunsi and Olayiwola, 2018). The growth and development of socio-economic facilities particularly the market results in their being located near primary arterial roads leading to traffic congestion, emission of a toxic substance into the atmosphere, loss of time, and late arrival to destinations (Adeyinka et al., 2016).

Several types of research carried out in urban studies in Nigeria have extensively discussed market facilities and their effects on adjoining neighborhoods, renewal of traditional markets, and decentralization of market and environmental sanitation schemes. None of these studies discussed the accessibility of urban residents to markets particularly issues relating to traveling distance, mode choice of transportation, and reasons for patronizing a particular market. This aspect of the study is highly essential because it will not only expose constraints of traders to city planners for policy-making but also it will help to promote the economic growth of the region and accelerate the sustainability of city development.

Several methods have been adopted in the literature to identify the appropriate/suitable location for establishing urban facilities (Manonmani et al. (2012), Waghmare (2015)). The application of Geographical Information System is the modern

*Author in correspondence,
Email address: musilimuadetunji@yahoo.com (Musilimu Adeyinka Adetunji)

ISSN: 2549-3221 (Print) 2549-323X (Online)
DOI: 10.26487/hebr.v5i2.2993

software approach to determine the appropriate location, accessibility, and utilization of urban facilities (Waghmare, 2015). Manonmani et al. (2012) have employed a GIS model for proper planning and effective management of existing infrastructure in Karaikal City, India. According to them, GIS can be used to update facility location, site suitability for various services, determine physical accessibility of service in terms of the shortest distance to urban facility based on the time of the day, and compute service demands for public facilities as well as determine the facility mostly linked.

The result of the mapping of the spatial distribution of urban facilities particularly markets using GIS will enable planners to determine the accessibility of markets to the traders in the city. Other parameters that determine the accessibility of urban facilities are accessible to functional transport infrastructure particularly better road networks, efficient or reliable transport services, and short traveling time.

2. LITERATURE REVIEW

Many theories are available in the literature to explain household accessibility to the location of services such as health care facilities, banks, and commercial centers, especially markets in any geographical area. Some of these theories include von Thünen (1826) theory of agricultural land use, which states that when other factors remain constant, transport cost is the main determinant factor in spatial arrangement/location of farm activity.

In a similar view, Christaller (1933) model of central settlement hierarchy explains the spatial arrangement, size, and several settlements that can function effectively in a particular area giving or providing a certain facility. He asserted that settlements simply function as 'central places' providing services to surrounding areas or neighborhoods. The basic assumption of Christaller's model was based on the principle that individuals want to minimize the time and cost involved in journeys to markets or shops and offices. To achieve this desire, a market is expected to be located close to people's homes as much as possible. This will give opportunity for consumers to have access to purchase more desired goods required in the same place.

Similarly, the owners of business firms will be willing to make more profits by delivering as much as possible goods and services at low transport fares. In a nutshell, the optimum aim of both the producer and consumer of goods and services is to have access to an efficient and reliable supply of desired products at a specific time. This can be achieved through proper planning and location of markets concerning residences of individuals coupled with efficient and reliable transport infrastructure.

A study on the pattern of distribution of markets and households or residents' accessibility to those markets is highly desirable as it will provide urban planners and other stakeholders comprehensive data on market locations and household travel patterns for effective city planning and development. It is against this background that this study seeks (i) to examine the geospatial location of markets in Akure metropolis (ii) determine the travel patterns/ characteristics of traders (mean distance travel and modal splits) from each locality to the market mostly patronized; and (iii) assess the challenges encountered by traders on their trips to the market in a fast developing city of Akure in Yoruba land, Southwestern Nigeria.

3. RESEARCH METHODS

3.1. Study Area

Akure metropolis, the study area, is located in South-Western Nigeria. It is about 323km to Abuja, the Federal Capital Territory of Nigeria and it is estimated to be 217 km to Lagos, the commercial hub of Nigeria (Taiwo, 2017). Akure city is located on Latitude 70 15' N of the Equator and Longitude 50 12' E of the Greenwich Meridian (See Figure 1). The city had a population of 239,124 in 1991 and has increased tremendously to 269, 207 in 1996 (NPC, 1996); it has also increased to 484, 798 in 2006 (Ogunbodede, 2008). It is the largest city and capital of Ondo State.

Before the advent of colonial administration in Nigeria, Akure had been a major commercial center in Ondo State. Apart from the Oba Adesida International market, which is the largest ultra-modern market in the city, more than ten traditional markets exist in different parts of the city. Many shopping malls and supermarkets of different sizes are located along the primary and secondary arterial roads in the Akure metropolis. Notable among these supermarkets are NAO, AFOYEM, OMEGA, DE CHRIS, and Shoprite. The spatial distribution of these commercial activities particularly markets has justified the main reason why more than 38% of industries in Ondo State are concentrated in Akure metropolis where their products can easily be accessible for sale in markets (Fatusin, 2015).

3.2. Toolset

The average distances to the markets were obtained using the Proximity analysis tools, 'Near' toolset of ArcGIS 10.7. The Near (Analysis) toolset calculates distance and additional proximity information between the input features and the closest feature in another layer or feature class.

The coordinates of locations of daily and periodic markets in the Akure metropolis were obtained using a hand-held Geographical Position System (GPS). The average distance of each market to the nearest one in Akure was measured using the 'Ruler' menu of ArcGIS 10.3.1 software. A structured questionnaire was designed to elicit information from heads of households about their travel characteristics to markets. For convenient administration of questionnaires to respondents, a stratified sampling technique was adopted to divide the city into eight major areas/localities/ communities.

In each community, an average of thirty questionnaires was administered to heads of households. Systematic random sampling was adopted to administer a questionnaire to the heads of households. This was based on the principle that once the initial household of one in every fifth building is selected, others follow sequentially. In all, a total number of 240 questionnaires were administered to the head of households in the city, out

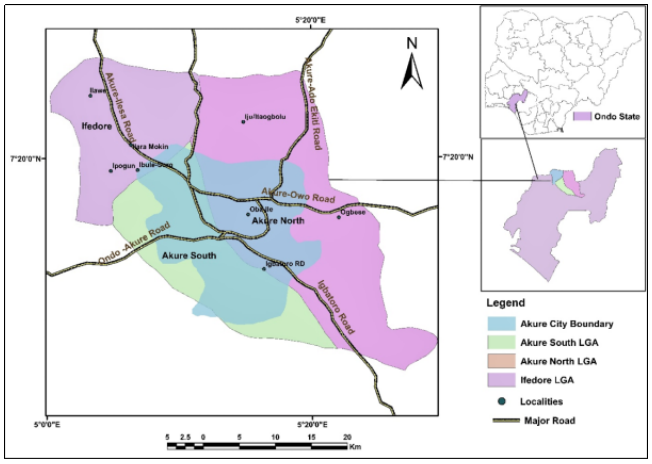

Figure 1: Map of the study area

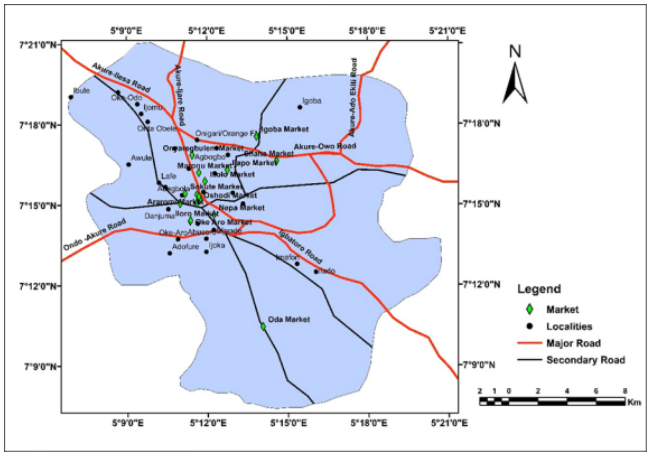

Figure 2: Distribution of Markets in Akure Metropolis

of which 170 questionnaires were satisfactory, completed, and analyzable.

Similarly, an observatory survey was conducted to assess the effects of market locations on travel patterns in the city. A market was classified based on the number of traders patronizing it in Akure. For instance, a market with traders of at least 5000 and above was classified as the largest market, while a market with estimated traders of 3000-4000 was classified as large, and a market having traders of 1000-2000 was classified as medium markets. Markets with traders of less or equal to 500 traders were regarded as small markets in the city.

3.3. Statistical Analysis

A frequency table was used to present the result of characteristics of markets, household mode choice of transportation, average travel distance, reasons for patronizing a particular market in the city, and constraints encountered on the journey to markets. Nearest Neighbour Analysis was employed to examine the pattern of distribution of markets in the Akure metropolis. Linear Regression Model was employed to examine the association between Distance travel to markets and household travel patterns (Mode choice of transportation, Transport Fare, and Average time taken to reach market).

3.4. Data

Both primary and secondary data were required for this study and two categories of data were elicited. The first category of data gathered was on household travel patterns to market, mode choice of transportation, average traveling time, the reason for patronizing a particular market, and constraints encountered during trips to markets. The second category of data collected was based on where markets are located in the city. Data on the effects of sitting of markets in a particular location was gathered for analysis and policy formulation for city planners. Data on the size of the market was estimated based on the number of traders patronizing the market.

4. RESULT AND DISCUSSION

Findings reveal that there are sixteen markets in Akure metropolis. Some of these markets are Oja Oba Adesida market, which is an ultra-modern market with more than 5000 traders patronizing it on daily basis. This market handles both manufactured and agricultural products. All sorts of agricultural goods produced in Nigeria which includes yam, banana, plantain, rice, and poultry products are available for sale in this market. Manufactured goods produced locally and imported from western countries are traded in the market.

At Oja Oba Adesida market, textile products, electronic equipment, imported building materials, automobile parts, and many others are on display in shops and along the major arterial roads to attract customers. In terms of ranking or classification of markets in the city, Oja-Oba Adesida can be classified as Higher-Order Market because of the services it renders to the inhabitants of the city. Other prominent markets where urban households can access both agriculture and manufactured goods in Akure are Isikan, Isolo, Igoba, and Iloro markets. Oja - Oba Adesida, Isikan, Arakale, Shasha, Nepa, Oshodi, Igoba, and Oyarebulemoperate daily while Oda, Araromi, Maronumo, and Ijapo operate periodically (Table 1). All markets located in high-density areas of Akure such as Oba Adesida, Isikan, Arakale, and NEPA operate daily.

These markets operate daily due to high population density to cater to the needs of the fast-growing population experienced in the town over the past four decades. Periodic markets are characteristic of rural weekly markets in developing countries, especially in India and Nigeria (Dey et al., 2017). Some markets in urban centers in Yoruba land operate periodically. Table 1 reveals that Osokute, Iloro, OkeAro, and Oda operate at an interval of five days. Four days are usually given to traders to rest and prepare for the next market day (Mulimani (2006) as cited in Dey et al. (2017)). Only the Maronu market operates two days intervals in the Akure metropolis.

The distribution of markets in the Akure metropolis shows an interesting pattern. Figure 3 indicates that markets in Akure are randomly distributed. The location of markets in Akure is

Table 1: Characteristics of Markets in Akure Metropolis

	Name of market	Classification of goods traded	Hierarchy of market goods	Types (daily or periodic)	Average traders	Classification of market
1	Oja Oba Adesida	Agriculture & manufactured goods	Higher order goods	Daily	5000	Largest
2	Shasha	Agricultural goods	Low Order	Daily	3000	Large
3	Isinkan	Agriculture & manufactured goods	Low Order	Daily	2000	Medium
4	Oda	Agricultural goods	Low Order	Periodic: 5 Days	2000	Medium
5	Arakale	Manufactured goods	Low Order	Daily	2000	Medium
6	Nepa	Agricultural goods	Low Order	Daily	1000	Medium
7	Iloro	Agricultural and Manufactured goods	Low Order	Periodic: 5 Days	1000	Medium
8	Araromi	Agricultural goods	Low Order	Daily	1000	Medium
9	Isolo	Agricultural goods & manufactured goods	Low Order	Daily & periodic	1000	Medium
10	Igoba	Agricultural & manufactured goods	Low Order	Daily	1000	Medium
11	Ijapo	Agricultural & manufactured goods	Low Order	Periodic	500	Smaller
12	Oshodi	Agricultural & manufactured goods	Low Order	Daily	500	Smaller
13	Oyarebulem	Agricultural goods/ Spare parts	Low/ higher Order	Daily	500	Smaller
14	OkeAro	Agricultural goods	Lower Order	Periodic: 5 Days	300	Smaller
15	Isokuti	Agricultural goods	Low Order	Periodic: 5 Days	200	Smaller
16	Maronu	Agricultural goods	Low Order	Periodic: 3 Days	200	Smaller

Source: Author's Field Survey, 2019

not evenly distributed among the neighborhoods/localities sampled in the city. Hence, each of the markets has a fair chance of being far or near any of the localities in Akure depending on a person's residence in the city. The result of the Nearest Neighbour Analysis of the pattern of distribution markets in Figure 3 shows that the Expected Mean Distance to Markets in Akure is 1248. 2414 meters, while the Observed Mean Distance is 1489. 5406 metres, with z- score = 1.333398 and p-value = 0.182401. The interpretation of this analysis confirmed the principle that if a facility is randomly distributed, there is a probability for households traveling short or long distances to such services, for example, markets; but it depends on the geographical location of the residents to the market.

Several indices have been applied in the literature to examine the accessibility of population and people to spatial facilities. Some of these indices are the connectivity matrix (gamma, alpha, and beta index) and accessibility index such as the Shimbel index. Knoing Index. These graph-theoretical indices have been criticized by many scholars on the ground that it does not explain the size, quality and length/ distance covered to the certain facility. Similarly, data related to transport services available to convey the residents to the location of services are not provided for easy interpretation of household accessibility. The concepts of distance traveled, mode choice of trans-

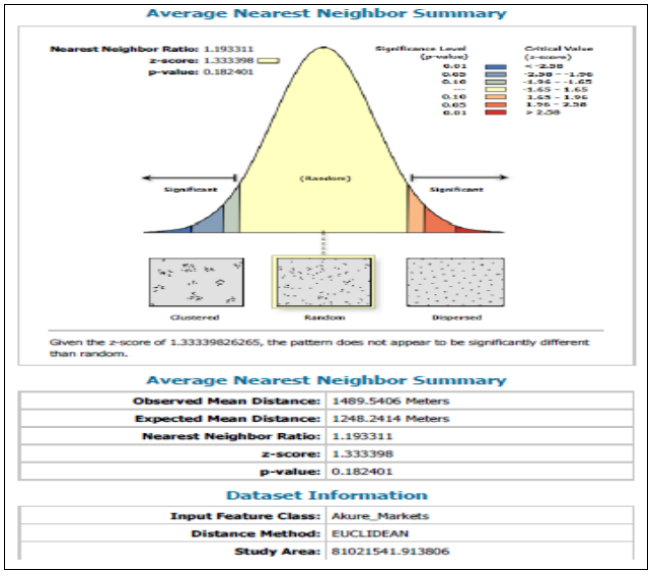

Figure 3: Results of Nearest Neighbour Pattern of Distribution of Markets in Akure

portation, average commuting distance were discussed to determine the level of accessibility of urban households to markets in Akure. The average mean distance traveled to markets in Akure is 2.5kms. Households residing at Adegbola Quarters, Arakale, Isolo, OkeIjebu, Onigari, Oshinle, Alagbaka, and Danjuma localities traveled/commuted less than 2.5kms to markets in Akure metropolis. The proximity of either periodic or daily markets to some of these localities allows the residents to travel short distances to markets to engage in shopping. Household members who reside at Oke –Odo, Ibule, and Ilado travel more than 5kms to the market for shopping (Table 2). However, this latter category of residents has traveled beyond 5kms that has been recommended as the expected average distance to access markets in European cities (Kompil et al., 2019).

Table 2: Mean Distance to the Nearest Markets from Different Localities in Akure Metropolis

S/N	Localities	Average Distance Traveled t The nearest markets
1	Ibule	9.24
2	Oyemekun	6.67
3	Ilado	5.24
4	Oke- Odo	5.11
5	Imafin	4.91
6	Ijomu	4.51
7	Awule	4.37
8	Orita –Obele	3.82
9	Igoba	3.6
10	Adofure	2.63
11	Ijoka	2.39
12	Ilere	2.23
13	Alagbaka	2.14
14	Lafe	1.95
15	Olu Foam	1.67
16	Abusoro	1.64
17	Oja- Oba Area	1.62
18	Oke- Aro	1.52
19	Champion	1.43
20	Seebi	1.27
21	Onigari/ Orange FM	1.11
22	Sijuade	1.04
23	Agbogbo	1.03
24	Danjuma	0.89
25	Oke-Ijebu	0.88
26	High School	0.74
27	Oshinle	0.53
28	Isolo	0.46
29	Arakale	0.06
30	Adegbola	0.023
Total Number of Localities = 30		74.93
Mean Distance Travel to the Nearest Market		2.5

Source: Author's Field Survey, 2019

The average distance traveled to markets in Akure to access higher-order goods such as electronic, automobile parts and many others is enormous but this depends on the locality of residents about markets. Table 3 and Figure 4 reveal that residents of 9 localities will have to travel more than 5 km to purchase higher-order goods in Akure. These localities are Ibule, Ilado, Igoba, Oyemekun, Imafon, OkeOdo, IjomuOritaObele, and Awule in chronological/ ascending order.

Table 3: Average Distance Travel to Oja Oba Adesida (King's Market) in Akure Metropolis

S/N	Localities	Average Distance to Oja- Oba Adesida (km)
1	Ibule	11.346
2	Ilado	9.381
3	Igoba	9.367
4	Oyemekun	9.294
5	Imafon	7.992
6	Oke-Odo	7.866
7	Ijomu	7.166
8	Orita- Obelele	6.464
9	Awule	5.478
10	Adofure	4.215
11	Onigari	4.128
12	Seebi	3.933
13	Olu Foam	3.742
14	Agbogbo	3.638
15	Ijoka	3.598
16	Oke-Aro	3.101
17	Lafe	3.062
18	Alagbaka	2.962
19	Abusoro	2.704
20	Champion	2.543
21	Oja-Oba Area	2.302
22	High School	2.285
23	Sijuade	2.274
24	Danjuma	2.269
25	Oke-Ijebu	2.091
26	Ilere	1.642
27	Oshinle	1.642
28	Adegbola	1.27
29	Isolo	0.593
30	Arakale	0.275
Average Distance to Oba –Adesida market : 4.287km		

Source: Author's Field Survey, 2019

In the early 60s, the use of public transport services for the intra-city movement was largely concentrated in the first order cities of Lagos and Ibadan while walking was the principal mode of urban transportation in the medium and small-sized towns in Nigeria. However, in the last three decades, things have changed drastically due to the high rate of urbanization that occurred in South-Western Nigeria, which led to

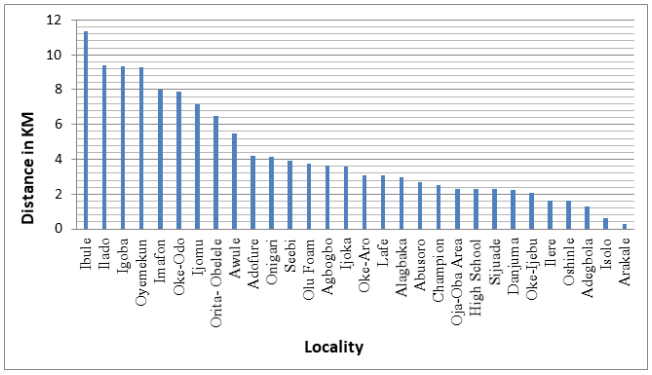

Figure 4: Average Distance Travel to Oja Oba Adesida Market in Akure

long-distance trips to different activity centers that necessitated the use of different forms of vehicles and automobiles in towns and cities (Ogunbodede, 2008).

Table 4 reveals that 41.8% of the respondents relied on the taxi for their trips to markets. Another 32.9% of households sampled indicated that they travel to the markets using motorcycles. This implies that more than 70% of households in Akure rely on public transport services for their shopping trips. Further analysis reveals that 10% of the urban households claim that they use their vehicles for their shopping trips. The result of this analysis is similar to the study carried out on determinants of transport mode choice in Germany and the USA, where Buehler (2011) reported that many households in Germany rely more on public transport for shopping and recreational activities than in America.

Table 4 further reveals that only 15.3% of households sampled in Akure claimed they walked to the markets to engage in their business transactions. The low percentage of urban commuters who rely on walking for shopping trips in Akure can be attributed to the poor design of intra-city roads. These roads lack pedestrian walkways with heavy traffic congestion that puts pedestrians at risk of being knocked down by vehicular movement. Many of the respondents indicated that they would have preferred to walk than relying on inefficient transport services that characterize the transport system in the city if the pedestrian walkways were provided along intra-city roads in the city.

Table 4: Mode Choice of Transportation to Market in Akure

Mode Choice	Frequency	Percentage
Walking/ Trekking	26	15.3
Motorcycle	56	32.9
Taxi	71	41.8
Personal Car/ Vehicle	17	10.0
Total	170	100.0

Source: Author's Field Survey, 2019

The array of goods traded in the markets and closeness of markets to urban households play a significant role as it concerns the markets patronized in the city. Table 5 reveals that 80.1% of households sampled in Akure metropolis claim that access to a large array of goods traded at Oba Adesida Market in terms of quantity and quality is the major determinant factor for patronizing the market. More than 70% of households sampled in Akure indicated that they patronize OkeAro, Araromi, Osokute, and Isikan markets because of the distance covered on their trips to markets. The result of this finding relates to the study carried out in Pune, India, where Astrop et al. (1996) report that distance to the trading points and convenience are the main reasons for trading/patronizing a particular market in India. They reported that many traders tend to trade within local areas and commute short distances to market.

Table reveals that a linear association occurs between distances traveled to markets and household mode choice of transportation, transport fare as well as average time spent on the journey to access markets in Akure metropolis. This association is significant at 0.05%. Similarly, Table 7 shows that the result of Rn= 0.723 and the Adjusted R Square = 0.515. This implies that the longer the distance traveled to market, the higher the transport fare expected to be paid to reach any market in the city. Also, more time is likely to be spent on the journey to access a market.

The average traveling time to access urban generic services located in local or regional areas varies from one country to another. Caubel (2006) ecommends an average of 10 minutes commuting radius from each district to reach a shop, health and administrative office in Lyon, France, while Paköz and Yüzer (2014) have proposed an acceptable 30 minutes traveling time to reach a sub-regional hospital using a multimodal choice of transportation in Istanbul, Turkey. This present study adopts an average of 30 minutes commuting radius to reach markets from traders' residences. This classification was adopted based on the spatial structure and morphology of the city, road network characteristics, availability of transport services, and spatial distribution of markets in the city.

Table 9 reveals that 76.5% of traders traveled within 30 minutes from their residence to the markets mostly patronized in Akure. Approximately 23.5% of traders interacted with travel for more than 30 minutes from their localities to the market in Akure. The latter category of traders has traveled beyond 30 minutes commuting radius recommended for maximum travel distance to reach generic services in urban centers in Turkey (Pakoz and Yuzer, 2014). More than 30% of traders in the Leo Area claimed that they traveled beyond 30 minutes to reach the nearest markets for their transactions (See Figure 5).

Generally, the spatial distribution of urban facilities in Nigeria does not follow the planning regulations (Ogundahunsi and Olayiwola, 2018). Political influence in the location of urban facilities coupled with the inability of the government to cater for and provide basic facilities for the fast-growing population has led to long-distance trips to markets. Virtually all markets in Akure metropolis are located along the roads. Many of these roads do not have parking spaces for loading and off-loading of passengers and goods traded or purchased in markets for onward transportation to the ultimate consumers.

To worsen the situation, traders display goods along the roads to attract customers in Akure, a pattern observed in many other cities in Nigeria. This trading practice in urban centers

Table 5: Results of Cross-Tabulation of Market Patronised and Reasons for Patronising Such Markets

Name of Market Patronised	Reasons for patronising the market								Total
	Closeness to my residence		Accessibility to Large array of goods		Convenience		Cheap goods can easily be available in that market		
	No	%	No	%	No	%	No	%	No
Oba Adesida	12	13.3	73	81.1	5	5.6	0	0.0	90
Okearo	10	83.3	0	0.0	2	16.7	0	0.0	12
Araromi	3	75.0	0	0.0	1	25.0	0	0.0	4
Osokute	2	100.0	0	0.0	0	0.0	0	0.0	2
Maronu	3	50.0	0	0.0	3	50.0	0	0.0	6
Isolo	1	33.3	0	0.0	2	66.7	0	0.0	3
Isinkan	8	72.3	0	0.0	3	27.3	0	0.0	11
NEPA	4	36.4	0	0.0	4	36.4	3	27.2	11
Shasha	0	0.0	15	48.4	0	0.0	16	51.6	31
Total	43	25.3	88	51.8	20	11.8	19	11.2	170

Source: Author's Field Survey, 2019

Table 6: Linear Association between Distance Travel to market and Household Travel Pattern

R	R Square	Adjusted R Square	Std. Error of the Estimate
.723a	.523	.515	204.917

a. Predictors: (Constant), Transport fare to market for returned journey, Mode of transport to market, Average travelling time to market

Source: Author's computation, 2019

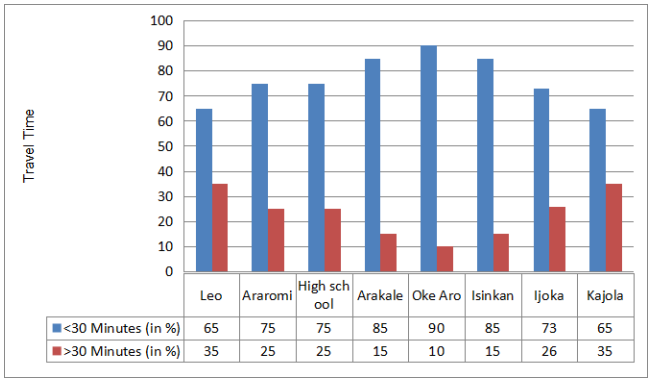

Figure 5: Average Travelling Time to Market in Sampled Localities in Akure Metropolis

in Nigeria creates traffic congestion as it hinders the free flow of vehicular movement. Some roads at the low-density parts of Akure are not tarred. As a result, residents of these areas who do not have their means of transportation are only able to access markets by relying on commercial motorcycles for their trips. Table 9 indicates that 49.4% of the households in Akure affirmed inadequate transport services as the major problem faced on their trips to markets.

Traffic congestion constitutes approximately 28.2% of the challenges encountered by households in Akure. Poor design of road networks contributes to 10% of the problems encountered by urban households in the study area.

5. CONCLUSION

The introductory part of this paper discussed the spatial distribution of markets in Nigeria. A review of the literature at the global level revealed that some basic urban facilities are inadequate due to population growth and the inability of governments to provide services for the fast-growing population. In the methodological section, both primary and secondary data were utilized to gather relevant information about the distribution pattern of markets in the fast-developing city of Akure in South-Western Nigeria. The report of the analysis reveals that markets are randomly distributed in Akure.

The location of markets in the city does not follow a regular pattern. Some residents travel considerable distances to access markets to engage in their business transactions. Linear association exists between distance traveled to markets and Mode Choice of Transportation, Average Travelling Time, and Transport Fare to Markets. This association is significant at 0.05%. The study concludes that there is a need to redesign the master plan of the city in such a way that urban residents would be more accessible to some basic facilities within a walking distance of less than 3kms to promote the sustainability of Akure and similar other cities in Nigeria.

Table 7: Linear Association Explaining the Level of Significant Variables Coefficients

	Unstandardized Coefficients		Standardized Coefficients	T	p-value
	B	Std. Error	Beta		
(Constant)	-2211	.556		-3978	.000
Mode of transport to market	.626	.205	.185	3060	.003
Average travelling time to market	1350	.510	.195	2650	.009
Transport fare to market for returned journey	1043	.160	.474	6510	.000

Source: Author's computation, 2019

Table 8: Average Travelling Time to Market in Sampled Localities in Akure Metropolis

Localities Sampled	Average travelling time to market				Total
	< 30 minutes		> 30 minutes		
	No	%	No	%	No
Leo	13	65.0	7	35.0	20
Araromi	15	75.0	5	25.0	20
High school	15	75.0	5	25.0	20
Arakale	17	85.0	3	15.0	20
OkeAro	18	90.0	2	10.0	20
Isinkan	17	85.0	3	15.0	20
Ijoka	22	73.3	8	26.7	30
Kajola	13	65.0	7	35.0	20
Total	130	76.5	40	23.5	170

Source: Author's computation, 2019

Table 9: Challenges encountered on Journey to markets in Akure Metropolis

Problems encountered in accessing Markets	Frequency	Percentage
Inadequate transport Services and Long waiting time for transport services	59	49. 4
High transport Fare by Public transport Operators	3	1.8
Poor Road Network Connectivity to Residence	17	10.0
Traffic congestion	48	28.2
Traffic Accident	1	0.6
Over Loading	12	7.1
Rude and bad behaviour of Public Transport Operators to commuters	5	2.9
Total	170	100.0

Source: Author's computation, 2019

References

Adetunji, M. A., Aloba, O., 2018. Analysis of the Distribution Pattern and Accessibility of Students to Secondary Educational Facilities in Lokoja, Kogi State, Nigeria. Annals of the University of Oradea 28 (1), 113–124. URL: http://istgeorelint.uoradea.ro/Reviste/Anale/Art/2018-1/11.AUOG_762_Musilimu.pdf

Adeyinka, S. A., Kuye, O. A., Agbabiaka, H. I., 2016. Assessment of Market Facilities and Locational Effects on Adjoining Neighbourhoods in Nigerian Urban Centres: Empirical Evidence from Akure, Nigeria. International Journal of Scientific and Technological Research 5 (4), 199–206. URL: https://www.ijstr.org/final-print/apr2016/Assessment-Of-Market-Facilities-And-Locational-Effects-On-Adjoining-Neighborhoods-In-Nigerian-Urban-Centers-Empirical-Evidence

Astrop, A., Palmer, C., Maunder, D., Babu, D. M., 1996. The Urban Travel Behaviour and Constraints of Low Income Households and Females in Pune. Working paper, India. National Conference on Women's Travel Issues, Baltimore, Maryland, USA, 23 - 26 October, 1996. Transport Research Laboratory, Crowthorne Berkshire United Kingdom. URL: https://www.fhwa.dot.gov/ohim/womens/chap12.pdf

Banister, D., 2008. The Sustainable Mobility Paradigm. Transport Policy 15 (2), 73–80. URL: https://doi.org/10.1016/j.tranpol

Bertolini, L., 2005. Sustainable Urban Mobility, An Evolutionary Approach. European Spatial Research and Policy 12 (1), 109–126. URL: http://esrap.geo.uni.lodz.pl/uploads/publications/articles/v12n1/LucaBERTOLINI.pdf

Caubel, D., 2006. An Increase of Public Transport and Accessibility to Urban Amenities, Some Limited Results. The Case of the Lyons Conurbation-WIT Transaction on Built Environment 89, 507–516. URL: https://doi.org/10.2495/UT060501

Christaller, W., 1933. Die zentralen orte Suddeutschland. Gustav Fischer, Jena.

Curtis, C., 2008. Planning for Sustainable Accessibility: The Implementation Challenges. Transport Policy 15 (2), 104–112. URL: https://doi.org/10.1016/j.tranpol.2007.10.003

Dey, T., Pathak, A. K., Baghmar, N. K., 2017. Geospatial Analysis of Rural Weekly Markets: A Case Study of BametaraDistrict of Chhattisgarh, India. Journal of Humanities And Social Science (IOSR-JHSS) 22 (5), 11. URL: https://doi.org/10.9790/0837-2205024553

Fatusin, A. F., 2015. Spatial Characteristics: A Planners view of Locational Pattern and Underlying Factors among Small Scale Industries in Ondo State of Nigeria. Ethiopia Journal Environmental Studies & Management 8 (3), 252–263. URL: https://doi.org/10.4314/ejesm.v8i3.2

Ferreira, A., Beukers, E., TeBrommeistroet, M., 2012. Accessibility is Gold, Mobility is Not: A Proposal for the Improvement of Dutch Transport-Related Cost Benefit Analysis. Environment and Planning B. URL: https://doi.org/10.1068/b38073

Jelili, M. O., Adedibu, A. A., Egunjobi, L., 2008. Regional Development Planning in Nigeria: The General and Particular. Journal of Social Sciences 16, 135–140. URL: http://doi.org/10.1080/09718923.2008.11892610 DOI: 10.1080/09718923.2008.11892610

Kompil, M., Jacobs-Crisioni, C., Dijkstra, L., Lavalle, C., 2019. Mapping accessibility to generic services in europe: A market-potential based approach.

Sustainable Cities and Society 47, 101372.
URL: https://doi.org/10.1016/j.scs.2018.11.047

Manonmani, R., Shanmugasundaram, P., Vidhya, R., Murugaiya, R., 12 2012. Application of GIS in urban utility mapping using image processing techniques. Geo-spatial Information Science 15, 271–275.
URL: https://doi.org/10.1080/10095020.2012.714660

Mulimani, A. A., 2006. Marketing Geography A Spatio-Functional Perspective. Premier Publication.

Ogunbodede, E. F., 2008. Urban Road Transportation in Nigeria From 1960 To 2006: Problems, Prospects And Challenges. Ethiopian Journal of Environmental Studies and Management 1.
URL: https://www.ajol.info//index.php/ejesm/article/view/41565
DOI: 10.4314/ejesm.v1i1.41565

Ogundahunsi, D., Olayiwola, O., 01 2018. An Assessment of Public Secondary School Infrastructure in Osogbo, Osun State, Nigeria 3, 112–124.

Ogunsanya, A. A., 2004. Perspectives on Urban Transportation in Nigeria. En: by Ogunsan ya, A. Vandu-Chikolo , I and Sumaila, A.G. Nigeria Institute of Transport Technology (NITT), Zaria. Kaduna MOD Press, A, pp. 1–26.

Paköz, M. Z., Yüzer, M. A., 2014. Determinants of Access to Healthcare: A Survey in Istanbul. 54th Congress of the European Regional Science Association: "Regional development & globalisation: Best practices", 26-29 August 2014, St. Petersburg, Russia. European Regional Science Association (ERSA), Louvain-la-Neuve.
URL: http://hdl.handle.net/10419/124488

Taiwo, S., 2017. Five biggest consumer markets in Nigeria.
URL: https://www.pulse.ng/bi/strategy/lagosabujakanoibadanport-harcourt-five-biggest-consumer-markets-in-nigeria/9y2pk4c

von Thünen, J. H., 1826. Der isolierte Staat in Beziehung auf Landwirtschaft und Nationalökonomie. Jena,G. Fischer.
URL: https://doi.org/10.5962/bhl.title.28726

Waghmare, V. V., 2015. Application of GIS in Planning of Facilitate Infrastructure. International Journal of Advance Research in Computer Science and Management Studies 3 (5), 356–362.

Williams, M., Kopnina, H., 2012. Car Attitudes in Children from Different Socio-Economic Background in the Netherlands. ransport Policy 24 (2012), 118–125.
URL: https://doi.org/10.1016/j.tranpol.2012.07.010