Residents Socio-Economic Characteristics and Market Visitation Pattern in Calabar Metropolis, Cross River State, Nigeria.

Ochiche, C. Abua; Isu, H. Eleje and Okpara, D. Elechi

Dept of Geography and Environmental Science, University of Calabar, Nigeria
Dept of Urban and Regional Planning, Akani Ibiam Federal Polytechnic, Unwana, Afikpo, Nigeria
Dept of Geography, Ebonyi State College of Education, Ikwo
Corresponding author: Ochiche, C. Abua

Abstract: *The aim of this study is to assess the impact of resident's socio-economic characteristics on market visitation pattern in Calabar Metropolis. The objective are; to identify the pattern of market distribution, the impact of resident's socio-economic characteristics on market visitation pattern, the challenges and planning implication of proper urban market planning. Physical observation of market sites and measurements of market location coordinate using GPS (Global Positioning System) where map of market distribution was produced. Data on socioeconomic characteristics and pattern of market visitation were collected with the aid of questionnaires administered to a sample size of 399 respondents. Data collected were analyzed and presented using descriptive and inferential statistics. The result obtained showed that income levels exert the most influence on market visitation pattern. Other influential variables are age, sex, marital status, occupation, education and vehicle ownership. Low income earners visit market more frequently than high income earners. The choice of which market to visit was found to be influenced mostly by the quality of market environment. The paper suggest improvement in the quality and standard of living of urban resident and proper sanitation to enhanced the quality of environment of urban markets.*

Keywords: *Residents socio-economic variables, urban market visitation, urban markets, Calabar metropolis*

--- ---------

I.   Introduction
      Worldwide, urban mobility takes place when inhabitants of towns carry out their different activities in different places whether by necessity or by choice. Urban mobility is the movement of urban residents from one location to another within the town for the purpose of interaction. Research outcomes conducted by Ayeni (1974), Adeniji (1981 & 1998) and Ojo (1990) have revealed that generally, people move in order to obtain access to a variety of other people, services and facilities that are not available at the point of origins of their journeys. To what extent, how far and by what means they travel is a result of a complex interaction of socio-economic, political and physical factors (Adeniji, 1991). The nature and degree of influence of these factors however vary from city to city and even within a given urban centre (Hausa & Schwab, 1987; Gordon et al, 1988; Rimmer, 1986; White, 1990; Garling et.al, 1994; Bhat and Koppelman, 1999).

      Calabar metropolis is the administrative headquarters of Cross River State. The town has so many points of socio-economic interaction where resident visits on a daily basis. One of these points is the market place. Market places in this town are authorized sites where buyers and sellers interact for the purpose of exchange. Two major markets dominate other markets in the city and these markets are Watt and Marian markets. Other smaller ones with less influence include Akim, Atimbo, Beach, Goldie,Efio-awan, Howel, Anantigha, Ikot ansa and Ikot ishie markets. Calabar residents gather in these markets on a daily basis to purchase and sell one thing or the other.

      Studies conducted on urban mobility pattern have been more of general mobility in towns. None of them have been specifically centered on mobility to market sites. Studies on the impact of urban resident's socio-economic characteristics on their market visitation   pattern are nowhere to be found. There is the need to fill the gap.

From the observed problem, certain fundamental research questions ensued;
1.   What is the spatial distribution pattern of the urban market in Calabar Metropolis?
2.   What is the pattern of market visitation by resident of Calabar?
3.   What socio-economic variables affect market visitation in Calabar?

4. What are the challenges facing market attendance in Calabar?
5. What are the environmental implications of proper market planning in Calabar?

This study is very significance because urban mobility pattern is still an area of concern to urban environmental planners all over the world. Town planners, Urban development authorities, estate managers, economic planners and various urban stakeholders need knowledge of the pattern of movement of urban residents to execute their assignment perfectly. Market planners are not left out of the benefits of the study of urban mobility.This work on resident socio-economic characteristics and market visitation is particularly useful in Providing information for proper market planning that will enhance market attendance and the quality of market environment. Similar research work have been undertaken by scholars such as Eja et al (2014), Efiong et al (2016) and Ochiche et al (2017).

Aim and objectives of study
The aim of this work is to assess the relationship between urban residents' socio-economic characteristics and market visitation pattern in Calabar Metropolis, Cross River State, Nigeria. The specific objectives for this study are stated below;
1. To identify the pattern of distribution of market in Calabar.
2. To access the impact of resident socio-economic characteristics on market visitation pattern by urban residents in Calabar.
3. To examine the challenges facing effective market attendance in Calabar.
4. To discuss the environmental implication of proper market planning in Calabar.

Research hypothesis
H_0: There is no difference in the perception of the impact of resident socio-economic characteristics on market visitation pattern in Calabar.
H_1: There is a significant difference in the perception of the impact of resident socio-economic characteristics and market visitation pattern in Calabar.

II. Literature review
Socio-economic characteristics and mobility pattern

Studies conducted by Fadare (1989 and 1992), Stephen et al. (2012) and Solanke (2014) have shown that individual and households' travel behavior is affected by their socio-economic conditions such as culture, city arrangement, level of transport development, religion, government policy, and households location in the city. Studies in the developed world have also shown that residential density or location has positive effect on trip rate, trip length and mode of travel of households of individuals (Aguilera et al., 2009; Aditjandra et al., 2010 and Richwood and Glazebrook, 2009).

The analysis of travel behaviour in Uppsala by Hanson, (1982) indicates that age, income, gender and car ownership have a clear impact on household's travel behavior. Further studies also revealed that people with higher incomes make more vehicular trips, embark on more social trips, visit more shopping areas in a weekday and travel greater distances. (Nass et al., 2011; Tardiff, 1975, and Badejo 2011).

Though works based on Nigeria residential density and travel behavior is very scanty, the works of Ayeni, (1975) in his studies of Jos, Fadare, (1989) in the studies of Ibadan and Fadare and Alade, (2009) in the study of Lagos revealed that residential density has a positive effect on trip rate of households in those places. Akindele et al. (2014) analyse the situation in USA and Britain and concludes that increases in number of cars per household have significant impacts on travel in that culture. In the study of Lagos, Fadare and Alade, (2009) maintained that income and car ownership variables are significant in both the medium and low density areas expressing the status structure of the people in Lagos.

In Netherlands, according to Schwanen et al., (2001) household type is clearly a major factor in the distance of individual travel. Here, two employed couple travel longer distance per day than families where at least a member is not formally employed.

Adetunji and Aloba, (2013) and Samson, (2012) also noted in their various studies that age and sex showed a significant influence on the individual and household trip length to activities on a weekday. It is shown that women's work trip are shorter than those of men due to differences in work place location. The study claimed that women are more likely to take job from nearby employers to reduce traveling time to facilitate their traditional household responsibilities more than anything else. Fadare and Morenikeji (2001) notes a gender bias in Niger state

as indicated by the overall statistically significant higher mean trip rate of men 4.6 against women 3.9 in Zaria, Nigeria.

Westford (2010) found that self-employed trip makers make shorter trips than those in regular employment, because many self employed people here locate within close proximity to their homes. Also in Zaria income is found to influence trip length considerably because low-income groups cover shorter distances from most weekday activities.

Pattern of distribution of market

Pattern of distribution of market refers to the way in which market in a region are arrange in space. Distribution is a common phenomenon of features occurring in specific locations and is a measure of neighbourliness or how close or disperse points are to each other. The processes that produced distribution pattern could be contagious or repulsive in nature. Contagious process bring feature together to cause agglomeration or clustering pattern of distribution while repulsive process caused dispersal of phenomena causing dispersed or scattered distribution. Where there is no process and the distribution is by chance occurrence, the pattern becomes a random one.

Literature on the pattern of distribution of urban market is virtually absent and only works done on rural markets are available. Madu (2001), in his study of periodic markets and rural development in Nsukka region, South-Eastern Nigeria discovered that markets in the region clustered around the central Plateau at an average spacing of 4.5km. In another study, Ochiche, Ajake and Okpiliya (2013) uncovers a random distribution of rural markets in Bekwarra Local Government Area of Cross River State. Markets meeting on the same day were found to be uniformly distributed in Yoruba land (Smith, 1971), Hausalans in Northern Nigeria (Hay & Smith, 1970) and Ghana, Fagerlund (1970).

Challenges facing market visitation

The actual decision on what market to attend is affected by many factors which usually work individually or collectively to encourage or discourage market patronage. In a study of Akungba-Akobo market in Ondo State, Allen (2012) observed that distance, market infrastructure and availability of commodities have great influence on market attendance. Many buyers were found to prefer nearby market to purchase and sell goods and services while wholesalers can travel to any length to buy goods and services.

In a related study, Ahmed (2013) considered the prevalent issues and challenges facing strategies for selling products and services in rural market. The study revealed improvement in infrastructural facilities for market expansion and patronage. Market infrastructure include roads, shops, stores, sanitation facilities, drainage channels, stalls and other market physical facilities.

Orewa and Egware (2012) carried a study on the comparative analysis of rural and urban market prices for gari in Edo State and concluded that prices of commodities has a major influence on market attendance and food security.

III. Conceptual Framework

Concepts of Spatial Interaction

Urban travel pattern constitute a form of spatial interaction. This is due to the area differentiation in land uses and activities such as working, Schooling, shopping and recreation. The study of residents' socio-economic characteristics and market visitation pattern can be explained from an understanding of the concept of spatial interaction in towns. The concept has been variously defined but all definitions tend to agree with Ewing and Cervero (2001) that it is the movement and mobility of things, ideas, goods and people between spatially separated parts or places.

Ullman (1996) gave three conditions, which are called Ullman's triad. They provide answers to the question on why people move. These three conditions as outlined by Ullman are Regional complementarity, Intervening opportunity and spatial transferability. Regional complementarity is largely created by area differentiation in the availability of resources; goods and services. This results in different area being able to provide different goods and services. In essence, it is the complementarity of supply and demand that brings about movement and interaction.

However, complementarity generates interaction between two areas only in the absence of intervening opportunity. This is the occurrence of alternative supply or demand for goods and services between two areas concerned. According to Rodrigue (1998), intervening opportunities are spatial sponges soaking up potential interaction between complementary areas.

Finally, transferability is the constraints imposed on movement of people, goods and services. It is generally measured in time and money cost. According to Ullman (1996), if the time and money costs of traversing a distance are two large, movement to such point will not take place despite perfect complementarity and the absence of intervening opportunities. This may result in area or products substitution.

This theory offers some explanations to the issue of spatial interaction in urban centers. The day-to-day movements of people for various activities such as trip making to and from places of work, recreation, market and health institutions are important in the spatial pattern of cities. The movement pattern of the urban residents is the function of the spatial separation of points of origins and destinations as well as the characteristics of the movers (Oyesiku, 2003). Even though the characteristics of the movers are not inclusive in the theory, yet it provides some explanations on why interactions take place in space (Solanke, 2005).

The spatial segregation of urban land uses creates spatial imbalances and this necessitates spatial interactions for functional interdependence. This complex development arising from uneven spatial distribution of activities that attract population concentration (market inclusive) in towns generates intricate pattern of movement (Hoyle & Knowle, 1998, Turton, 1992) and this has been helpful in understanding human spatial behavior.

Central place theory

This research work is also built around the central place theory of Walter Christaller propounded in 1933. The theory states that the number, sizes and pattern of spatial distribution of central places can be explained by the operation of the forces of demand and supply which is influenced by the extent to which these centres provide goods and services to their surrounding areas.

According to the theory, if central places (markets inclusive) exist for the purpose of supplying goods and services to its surrounding areas, then there should be an order in their distribution. This order ranges from higher order through middle order to lower order central places. Higher order central places are fewer in number, contain higher order goods and are more widely spaced that lower order central places.

Christaller built his theory on the concepts of range of goods and threshold population. Range of good is the maximum distance a buyer or seller is willing to go in order to purchase a good while threshold population is the minimum population or demand needed to sustain a business.

Method of Study

Calabar Metropolis is the capital of Cross River State, Nigeria. It consist of Calabar Municipality and Calabar south with 10 and 12 electoral wards respectively. Land mass is 427.05km^2. Calabar metropolis is bounded in the North by Odukpani L.G.A, in the East by the great Kwa river, in the west by the Calabar River and in the south by the estuary of the Atlantic Ocean. Calabar Metropolis has enjoyed a long urban history having once served as the first capital of Nigeria from 1882 to 1906 (Eni 2006). The city's current population is estimated at 593,249. As a tourist attraction centre, the city host an annual cultural festival tagged Calabar Carnival.

In this work, the type of data needed and used are socio-economic characteristics of residents of Calabar (age, sex, marital status, income, religion, occupation, education etc) market location coordinates, pattern of market visitation, distance covered, commodities bought and sold, socio-demographic characteristics of respondents and quality of market environment.

The primary sources of data for this work include household residents of Calabar metropolis, market sites and national population commission (NPC). Secondary data sources offer information obtained from other person's work and include journals publications, books, maps, magazines, newspapers, internet, periodical and dissertation.

The sample size and sample techniques for this study was determined using projected population of Calabar metropolis up till 2018 from where the total number of households in Calabar was worked out using 3.9 average household size for Cross River State.

The Taro Yamane (1973) formula for finite population was used to statistically determine the minimum sample size of households for the study. This formula is stated as follows;

$$N = \frac{n}{1+(e)2}$$

Where N=sample size of households

E= level of significance = 50%

I = Unity

The projected population was worked out using the exponential population growth model; $Pt = Po\,(1=r)^n$

Where Pt = projected population of Calabar up till 2018

Po = base year population (1991)

R = growth rate of the population

N = time lapse in years (from 1991 – 2018)

There are 22 electoral wards in Calabar metropolis. Out of this number, eight (8) were selected for this study using simple random sampling. The eight (8) wards, their projected population, number of household and sample sizes are shown in Table 1 below.

Table 1: Sample size of household for selected electoral wards in Calabar Metropolis

S/N	Ward	Census 1991 population	2018 projected population	Number of households base on 3.9 Average	Sample size
1	ONE(Ediba Akim)	56,091	118,224	30,314	99
2	FOUR(Ikot Ekaedim)	2,897	6,106	1,566	05
3	TEN(Mbacoco)	8,915	18,790	4,818	16
4	ONE(Calabar)	125,084	263,643	67,601	221
5	THREE(Efut)	21,769	45,883	11,765	38
6	FIVE(Cobham)	5,307	11,186	2,868	09
7	SEVEN(Innuendo)	3,576	7,537	1,933	06
8	EIGHT(Anantigha)	2,655	5,596	1435	05
		226,294	476,965	122,300	399

For the actual administration of the questionnaires, systematic random sampling was used. All the streets in the selected wards were identified and sampled using simple random sampling techniques. Every 4th household resident is systematically selected and administered a questionnaire which was filled or responded by the most elderly person.

Questionnaires, physical observation and measurement as well as interviews were the methods of data collection adopted for this study. The questionnaire consist of two sections A and B. Section A is devoted to socio-demographic characteristics of household respondents while section B is to the effects of residents' socio-economic characteristics on market visitation pattern.

Market location coordinates and inter-market distances were measured using global positioning system (GPS) and GIS software applications. Market arrangements, goods and services, sanitation and waste collection methods were observed and recorded.

Both descriptive and inferential statistical techniques were used to analyze data collected from the field. Descriptive analysis included the use of simple averages, percentage, tables and charts to summaries attribute data. Chi-square statistical tool was used to test the hypothesis for this work.

The formula for chi-square is (x^2)

$$X^2 = \mathcal{E} \frac{(O-E)^2}{E}$$

Where x^2 = chi-square

O = observed value

E = expected value

Є = sign of summation

IV. Results

Socio-demographic characteristics of respondents

Table 2 displays the socio-demographic characteristics of the study population. From the table, 58.1 percent of the respondent are female while 41.9 percent are male. 48.9 percent are old adults, 26.5 percent are old people while the young adults constitute 24.6 percent. 86.9 percent of the respondents passed through formal education while 13.1 percent received informal education. 51.2 percent of our respondents are married. Civil service and business dominate occupation of our respondents with 26.6 percent and 26.1 percent respectively. The dominant religion of our respondents is Christianity with 72.7 percent. In terms of income level, 25.3 percent of the respondents are low income earners, 46.4 percent are middle income earners while 28.3 percent are high income earners. 33.1 percent own vehicles while 66.9 percent do not.

Table 2: Socio-demographic characteristics of respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	167	41.9
Female	232	58.1
Age		
16-34	98	24.6
35-64	195	48.9
Over 64	106	26.5
Educational attainment		
Primary	64	16.0
Secondary	145	36.3
Tertiary	138	34.6
Informal	52	13.1
Marital status		
Single	71	17.8
Married	204	51.2
Divorced	66	16.5
Separation	58	14.5
Occupation		
Civil service	106	26.6
Business	104	26.1
Student	67	16.8
Retired	74	18.5
Unemployed	48	12.0
Religion		
Traditional	28	7.0
Christianity	290	72.7
Islam	65	16.3
Others	16	4.0
Income		
Low income	101	25.3
Middle income	185	46.4
High income	113	28.3
Vehicle ownership		
Yes	132	33.1
No	267	66.9

Spatial distribution of market in Calabar metropolis

Table 3 shows market location information in Calabar while fig 1 is the map of Calabar metropolis showing the distribution of these markets. From the table and map, there are over 24 markets in Calabar metropolis where people buy and sell goods and services. The average intermarket distance is worked at 5.5 kilometers. A closer look at the map reveals that the markets tend to cluster around major centres and roads.

Table 3: Markets locations in Calabar Metropolis

S/N	Name of market	LGA	Latitude	Longitude	Elevation (m)
1	Effio-Anwan	Calabar south	4.927852^0	8.324685	-3.69
2	Watt market 1	Calabar south	4.958907	8.322607	23.56
3	Spar mall	Calabar south	4.959488	8.326420	12.87
4	Marina market	Calabar south	4.963753	8.316222	28.91
5	Watt market 2	Calabar south	4.957680	8.320395	29.16
6	Beach market (Neisun)	Calabar south	4.952163	8.310337	31.27
7	Beach market (cloth)	Calabar south	4.953907	8.310383	18.06
8	Watt market 3	Calabar south	4.956580	8.321992	17.75
9	Ibesikpo market (Afokang)	Calabar south	4.930440	8.311542	31.97
10	Abatuwa market (Anantigha)	Calabar south	4.915518	8.322310	21.44
11	Mbukpa market	Calabar south	4.938052	8.316802	20.46
12	Howell market	Calabar south	4.933152	8.32350	9.14
13	Goldie-mount zion	Calabar south	4.945983	8.343028	25.00

	mrt				
14	Abasi obori market	Calabar south	4.945587	8.333175	19.00
15	Uwanse market	Calabar south	4.941132	8.337903	56.58
16	Atakpa market	Calabar south	4.945078	8.328025	10.70
17	Akim market	Calabar municipality	4.960797	8.3339748	45.27
18	Mammy market	Calabar municipality	4.961090	8.338930	24.37
19	Timber market	Calabar municipality	4.962091	8.337622	20.34
20	Marian market	Calabar municipality	4.975772	8.340217	44.55
21	Ikot Ishie market	Calabar municipality	4.997607	8.338568	46.85
22	8 miles market 1	Calabar municipality	5.056095	8.360983	36.58
23	8 miles market 2	Calabar municipality	5.057363	8.354190	22.61
24	Edim Otop market	Calabar municipality	4.967670	8.356473	24.41

FIG. 1: Spatial distribution of markets in Calabar Metropolis

Residents' socio-economic characteristics and market visitation pattern

Respondents most influential socio-economic characteristics of urban residents that impact on market visitation pattern in Calabar are shown in table 4 below. From the table, the most influential socio-economic factor of urban market visitation pattern is income with 26.6 percent. Other characteristics of no less importance are age (10.3 percent), gender (14.0 percent), education (10.8 percent), occupation (11.5 percent), marital status (14.3 percent) and vehicle ownership (12.5 percent).

Table 4 Respondents most influential socio-economic characteristics of urban market visitation

Socio-economic characteristics	Frequency	Percentage (%)
Age	41	10.3
Gender	56	14.0
Education	43	10.8
Occupation	46	11.5
Marital status	57	14.3
Income	106	26.6
Vehicle ownership	50	12.5
Total	399	100

Residents' income level and frequency of market visitation were analyzed and presented in table 5 below. From the table, most of the low income earners visit market twice in a week while majority of the middle and high income earners visit markets once in a week in Calabar. In terms of the period of market visitation within the week, low income earners do not have a specific period or days for patronizing markets. The middle and high income earners often patronize markets on weekends (see table 5 and 6).

Table 5 Residents income level and frequency of market visitation

	Frequency of market visitation											
	Daily		Twice a week		Weekly		Monthly		Occasionally		None		Total
Income level	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Low income	12	11.9	54	53.5	25	24.8	3	3.0	6	5.9	1	0.9	101
Middle income	170	9.2	60	32.4	82	44.3	9	4.9	15	8.1	2	1.1	185
High income	5	4.5	30	26.5	57	50.4	8	7.1	10	8.8	3	2.7	113

Table 6 Resident income level and period of market visitation

	Period of market visitation						
	Beginning of week		Mid week		Week end		
Income level	Freq	%	Freq	%	Freq	%	Total
Low level	73	72.3	84	83.2	90	92.1	101
Middle income	21	11.4	128	69.2	165	89.2	185
High income	10	8.8	20	17.7	105	92.9	113

Table 7 below shows the most preferred time for visiting market by resident in Calabar. From the table, most resident prefer morning period (41.6 percent). Next in line is evening (30.1 percent), afternoon (23.3 percent) and night (5.o percent).

Table 7 Residents most preferred time for market visitation

Time	Frequency	Percentage (%)
Morning	166	41.6
Afternoon	93	23.3
Evening	120	30.1
Night	20	5.0
Total	399	100

Table 8 below depicts what resident buy in small and big markets in Calabar. From the table, majority of the resident purchase retailed goods in small market (lower order markets) and wholesale goods as well as rare expensive goods in bigger markets (higher order markets) in Calabar.

Table 8 Types of goods purchased by residents in small and big market in Calabar

| Types of good	Small market		Big market	
	Frequency	Percentage	Frequency	Percentage
Retailed good	296	74.2	81	20.3
Wholesale good	71	17.8	329	82.5
Rare expensive good	32	8.0	384	96.2

Resident average distance to the nearest and furthest market was worked out at 3.5km and 5.5km respectively. The longest distant travelled to market is 9 kilometers while the shortest ever travelled by resident is 0.5km.

Table 9 and 10 displayed the means of transport used by urban residents to move to and from the markets respectively in Calabar. From the two tables, most Calabar residents use tricycle and commercial vehicles to move to markets and from the markets. Tricycle is the most prefer means of transport when moving to the market and commercial vehicles when returning from the markets

Table 9 Residents' means of transportation to the market

Means of transport	Frequency	Percentage (%)
Human portrays	46	11.5
Private vehicle	50	12.5
Official vehicle	30	7.5
Commercial vehicle	127	31.8
Tricycle	136	34.2
Ferry	10	2.5
Total	399	100
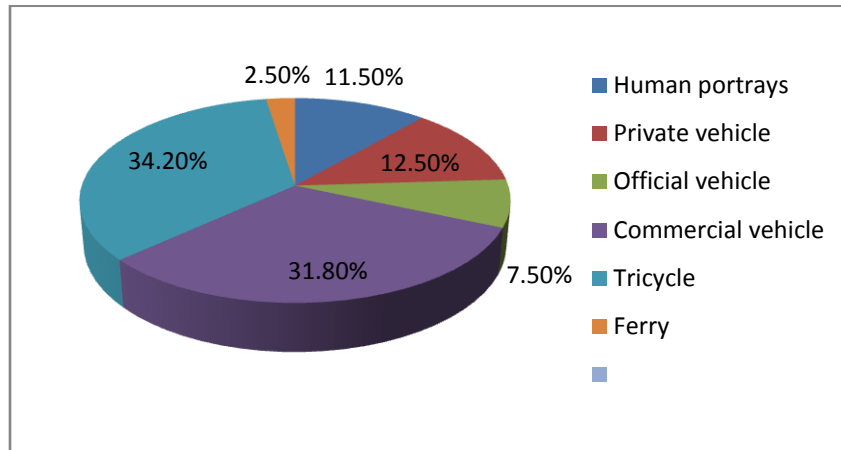
FIG. 2: Pie chart showing residents' means of transportation to the market

Table 10 Residents' means of transportation from markets

Means of transport	Frequency	Percentage (%)
Human portrays	37	9.3
Private vehicle	50	12.5
Official vehicle	30	7.5
Commercial vehicle	149	37.4
Tricycle	121	30.3
Ferry	12	3.0
Total	399	100

Table 11 depicts factors that have the most influence on the choice of markets to attend in Calabar. From the table, one can conclude that the major factors that decide which market to visit in Calabar is the quality of market environment (35 percent), further investigation by way of interview revealed that visitors to the markets often avoid markets with poor waste management, floods, flies, damed conditions and general poor hygienic conditions. Other factors that influence the choice of market to visit include; distance, price of goods and availability of goods.

Table 11 Factors that have the most influence on choice of market to visit in Calabar

Factor	Frequency	Percentage (%)
Distance	88	22.1
Price of goods	67	16.8
Availability of goods	101	25.3
Quality of market environment	143	35.8
Total	399	100

Sales

- Distance — 22.10%
- Price of goods — 16.80%
- Availability of goods — 25.30%
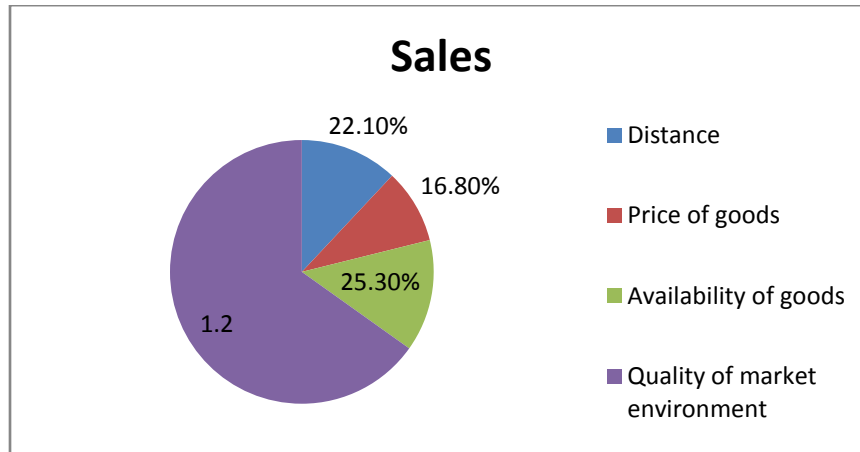- Quality of market environment — 1.2

FIG. 3: Pie chart showing factors that most influence on choice of market to visit in Calabar

Plate 1: Waste dump at Watt market

Test of hypothesIs

H$_0$: There is no significant difference in the perception of the impact of residents socio-economic characteristics on market visitation pattern in Calabar.

H$_1$: There is a significant difference in the perception of the impact of residents socio-economic characteristics on market visitation pattern in Calabar.

Data for testing this hypothesis was derived from the question on likert scale as shown in Table 12 below.

Table 12 Summary of response to perception of the influence of socio-economic characteristics on market visitation.

Factors	Strongly agreed	Agree	Disagree	Strongly disagree	
Age	149	196	31	23	399
Gender	172	188	21	18	399
Education	169	185	24	21	399
Occupation	185	163	29	22	399
Vehicle	166	193	21	19	399
Income	208	164	15	12	399
	1,049	1,089	141	115	399

$$X^2 = \frac{(\varnothing - \Sigma)^2}{E} \qquad\qquad E = \frac{RT \times CT}{N}$$

$$\frac{399 \times 1049}{ } = 174.8$$

2,394

$\frac{399 \times 1089}{2,394} = 181.5$

$\frac{399 \times 141}{2,394} = 23.9$

$\frac{399 \times 115}{2,394} = 19.2$

Age	174.8	181.5	23.9	19.2
Gender	174.8	181.5	23.9	19.2
Education	174.8	181.5	23.9	19.2
Occupation	174.8	181.5	23.9	19.2
Vehicles	174.8	181.5	23.9	19.2
Income	174.8	181.5	23.9	19.2
$(\phi - \Sigma)$				
1	-25.8	14.5	7.1	3.8
2	-2.8	6.5	-2.9	-1.2
3	-5.8	3.5	0.1	1.8
4	10.2	-18.5	5.1	2.8
5	-8.8	11.5	-2.9	-0.2
6	33.2	-17.5	-8.9	-7.2

$(\phi - \Sigma)^2$

1	665.64	210.25	50.41	14.44
2	7.84	42.25	8.41	1.44
3	33.64	12.25	0.01	3.24
4	104.04	342.25	26.01	7.84
5	77.44	132.25	8.41	0.04
6	1102.24	306.25	79.21	51.84

$\frac{(\phi - \Sigma)^2}{E}$

1	3.81	1.16	2.11	0.75
2	0.04	0.23	0.35	0.08
3	0.19	0.07	0.00	0.17
4	0.60	1.89	1.09	0.41
5	0.44	0.73	0.35	0.00
6	6.31	1.69	3.31	2.70

X^2 = summation of $\frac{(\phi - \Sigma)^2}{E}$ = 28.48

Degree of freedom = [No of rows -1] [no of columns -1]

= [6-1] [4-1] = 5x3 =15

Confidence level = 5%

X^2 tabulated = 24.996

The conclusion is that since the calculated value [28.48] is greater than the critical tabulated value [24.99] we reject the null hypothesis and accept the alternative hypothesis which says the is a significant difference in the observed pattern of perception of socio-economic characteristics of urban residents and market visitation pattern.

V. Discussion of finding

The study reveals that a strong positive relationship exists between resident socio-economic characteristics and market visitation pattern in Calabar as over 70 percent of the respondents agreed to such relationship. The chi-square test also confirm a positive significant difference in the perception of the impact of resident socio-economic characteristics on market visitation, pattern. The resident socio-economic characteristics investigated are age, sex, occupation, education, income and car ownership. This positive link between socio-economic characteristics and market visitation pattern by urban residents corroborates the work and findings of many scholars who have done so much work in the area of urban resident mobility, Hanson (1982) for instance has analyzed travelled behavior in Uppsala and discovered that age, income, gender and car ownership have impact on household travel behavior.

Similar revelations had also been made by Tardiff (1975), Badejo (2011), Fadare (1989) in Ibadan, Ayeni (1975) in Jos, Fadera and Alade (2009) in Lagos, Westford (2010), Adetunji and Aloba (2013), Fadera and Morenikeji (2001).

It was also discovered that low income earners make frequent market trips than high income earners. While most low income earners visits market twice a week, high income earners visits market once in a week mostly on weekends. This observed pattern of market visitation could be explain by the fact that low income earners do not have a reliable and steady income that will permit them to embark on wholesale purchase like their high income counterparts. They also lack household appliances needed to process and store goods bought from the markets.

VI.   Summary of findings

The summary of findings of this work on resident socio-economic characteristics and market visitation pattern in Calabar metropolis is stated as follows;

i)   Market visitation pattern of residents of Calabar is found to be influenced by socio-economic characteristics such as age, gender, income, marital status, education, occupation and vehicle ownership.
ii) Of all the resident socio-economic characteristics investigated, income has the most influence on market visitation pattern.
iii) Low income earners make more frequent visit to the market than high income earners.
iv) Calabar metropolis has over 24 market distributed across the region for exchange of goods and services.
v)   Most high income earners visit market on weekends while low income earners do so throughout the days of the week.
vi) Resident of Calabar buys retailed goods in small market while wholesale and rare and expensive goods are obtained from large market in town.
vii) Resident average distance to the nearest market is 3.5 kilometer and farthest market is 5.5 kilometer.
viii) Most resident visit markets in the morning and evening for purchases.
ix) Tricycle and commercial vehicles are the dominant means of transport to markets in Calabar.
x)   The factor that have the most influence on the choice of market to visit is the quality of market environment which is determined by the level of sanitation.

VII.   Conclusion

The study of resident socio-economic characteristics and market visitation pattern in Calabar metropolis has produced results that helps one understand urban mobility behavior especially those directed toward shopping activities. It is clear now that income of urban resident played a major role in the frequency of the market patronage in Calabar. The low income earners patronize markets more frequently that will warrant buying of goods in large qualities for processing and storage. Other important socio-economic variables that influence market patronage include age, sex, occupation, marital status, vehicle ownership and education.

The actual decision on the choice of what market to visit by resident of Calabar was found to be influenced by such variables as distance, price of commodities, available of goods and the quality of market's physical environment. A proper understanding of these socio-economic characteristics of urban resident and other factors is therefore needed to enhance urban mobility planning and general market planning.

Recommendation

Based on the findings on this work, the following are therefore recommended for proper market participation by urban residents;

1. Creation of employment opportunities for urban resident.
2. Increment in salaries and wages as well as regular payment of resident earnings.
3. Introduction and maintenance of public transport services in order to reduce the number of private vehicles and tricycle on the road.
4. Proper sanitation in and around market sites to keep market environment safe.

References

[1].   Adeniji, K. (1991). Urban mobility crisis, where do we go from here? Paper delivered at Ogun State Public Service Forum Gateway Hotel, Abeokuta.
[2].   Adeniji, S. A. (1981). Public transportation and urban development strategy in Nigeria. Unpublished Ph.D Thesis, University of Wales, Pontain.
[3].   Adeniyi, K. (1985), Urban Transportation System in Nigeria. ODU: A Journal of West African Studies, 28, 81-97.
[4].   Adetunji M. A (2010). Spatial Analysis of Urban Mobility Pattern in Ilesa, Osun State. Unpublished Ph.D Thesis. Department of Geography, Obafemi Awolowo University, Ile- Ife. Adetunji,

[5].   Aditjandra, P.; Cao, X.; Mulley, C. (2010). Understanding neighbourhood design impact on travel behaviour: An application of structural equations model to the British micro- analysis data. Presented at the 12th World Congress on Transport Research in Lisbon, Portugal, July 11–15, 2010.

[6].   Aguilera, A.; Wenglenski, S.; Proulhac, L. (2009). Employment sub-urbanisation, reverse commuting and travel behavior by residents of the central city in the Paris metropolitan area. Transportation Research A 43(7), 685–691.

[7].   Ahmed, A. (2013). Rural marketing strategies for selling products and services: Issues and challenges. Journal of Business Management and Social Science Research (JBM&SSE), 2(1).

[8].   Akindele, O. A.; Ogunleye J. S.; Muili, A. B. (2014). Intra Urban Pattern and Acceptability of Bus Station in Ilorin, Nigeria. Global Journal of Arts, Humanities and Social Sciences, 2(8), 65-79.

[9].   Allen, A. A. (2012). Characteristics of periodic markets in Akungba-Akoko, Ondo State, Nigeria. Ife Research publication in Geography, 11(1), 14-21.

[10].   Ayeni, M. A. O. (1975). Some determinants of the propensity to interact in an urban system: A case study of Jos, Nigeria. Nigerian Geographical Journal, 18(2), 111-119.

[11].   Ayeni, M.A.O. (1974), Predictive modelling of urban spatial structure: The example of Jos, Benue-Plateau State, Nigeria, Unpublished Ph.D. Thesis, University of Ibadan.

[12].   Badejo, B.A. (2011). Transportation, removing the clogs to Nigeria's development. Lagos, Nigeria: Anchorage Press and Publishers.

[13].   Christaller, W. (1966). Central places in Southern Germany in Baskin, C. W.(Trans.), New Jersey: Prentice Hall Engle Wood Cliff..

[14].   Ewing, R.; Cervero, R. (2010). Travel and the built environment. Journal of the American Planning Association, 76, 1–30.

[15].   Fadare, O. (1992). Modeling public transport choice in varying housing areas of Ibadan. Nigeria Journal of Economics and Social Studies, 34(2).

[16].   Fadare, O.; Adewale, A. (2009). Intra-Urban variation of household's trip generation in Lagos Metropolis. Journal of Nigerian Institute of Town Planners, 22(1), 74-87.

[17].   Fadare, S. O. (1989). Analysis of factors affecting household trip generation in residential areas, Ibadan. Ife Research Publication in Geography, 3, 38-48.

[18].   Fadare, S.O. & Morenikeji, W. (2001). Gender bias in intra-urban trip making in Niger State. International Journal of Transportation Studies, 1(1), 73-85.

[19].   agerlund, V. G. & Smith, R. H. T. (1970). Preliminary map of market periodicities in Ghana, The Journal of Developing Areas, 4, 333-348.

[20].   Hanson, S. (1982). The determinants of daily travel activity patterns: Relative location and socio demographic factors. Urban Geography, 3, 179-202.

[21].   Ibrahim, R. B. (2012). Evaluating Intra-Urban Transportation and Gender Travel Behaviour in Ilorin, Nigeria. Global Journals of Human Social Science Arts and Humanities, 12(14), 7-17.

[22].   Aloba, O. (2013). Urban spatial structure and work trip patterns in South-western Nigeria: The example of Ilesa. Journal of Geography and Regional Planning, 6(4), 93-102.

[23].   Madu, I. A. (2001). Periodic markets and rural development in Nsukka region, South-Eastern Nigeria in Nwafor, Bob-Duru & Anyadike (eds.), Georgraphical reports of the University of Nigeria, Essays in honour of Professor G. E. K. Ofomata, Geography Department, University of Nigeria Nsukka, 165-181.

[24].   Nass, P.; Strand, A.; Nass, T. & Nicolaisen, M. (2011). On their road to sustainability? The challenge of sustainable mobility in urban planning and development in two Scandinavian capital regions. Town Planning Review, 82(3), 285–315.

[25].   Ochiche, C. A., Ajake, A. & Okpiliya, F. (2013). Spatio-temporal distribution of rural markets in Bekwarra Local Government Area of Cross River State of Nigeria. IOSR Journal of Humanities and Social Science (IOSR- JHSS), 16(3), 103-112.

[26].   Orewa & Egware (2012). Comparative analysis of rural and urban. Market prices in Gani in Edo State, Nigeria: Implications for food security. Journal of Development in Agricultural Economics, 4(9), 252-257.

[27].   Rickwood, P.; Glazebrook, G. (2009): Urban Structure and Commuting in Australian Cities. Urban Policy and Research 27(2): 171-188.

[28].   Rodrigue, J. P. (1998). Transport Geography. An online Textbook. Department of Economics and Geography. Horstra University. Available at: https://people.hofstra.edu/geotrans/. Accessed 15 December 2017.

[29].   Samson, B. O. (2012). An analysis of intra-city patterns of residents in Lagos metropolis, Nigeria. International Journal of Development and Sustainability, 1(2), 560.

[30].   Schwanen, T.; Dieleman, F.M.; Dijst, M. (2001). Travel Behaviour in Dutch Monocentric and Polycentric Urban Systems. Journal of Transport Geography, 19, 173-186.

[31].   Smith, R. H. T. (1970). A note on periodic markets in West Africa. African Urban Notes, 5(2), 29-37..

[32].   Solanke, M.O. (2005). Spatial Analysis of Intra-urban Travel Patterns in Ogun State. A Ph. D. Thesis Submitted to the Faculty of the Social Sciences, Department of Geography University of Ibadan, Ibadan.

[33].   Solanke, M.O. (2014). Socio-economic determinants of intra-urban trips generation in Ogun State, Nigeria. Current Research Journal of Social Sciences, 6(1), 15-20.

[34].   Tardiff, T. (1975). Comparison of Effectiveness of various measures of socio-economic status in Models of Transportation behavior. Transportation Research Record, 534, 1-9.

[35].   Ulman (1996). Action Planning. London: Prince of Wales' Institute of Architecture.

[36].   Westford, P. (2010). Neighborhood design and travel: A study of residential quality, child leisure activity and trips to school. Doctoral dissertation. Stockholm: Royal Institute of Technology.

[37].   Ochiche, C. A. and Adie, H. I. (2017), Administration of Urban Water Supply, Issues, in Ugep, Yakurr Local Government Area of Cross River State, Nigeria, IOSR Journal of Humanities and Social Science, Vol.22, Issue 6, Ver.5, pp 20-30

[38].   Efiong, J,; Digha, O.N. and Ochiche, C. A. (2016), Spatial Dependency in the Voting Pattern of the 2015 Nigeria's Presidential Election, Scholars Journal of Arts, Humanities and Social Sciences, Vol 4(11), pp 1399-1410

[39].   Eja, Eja I.,Ochiche; C.A. and Onabe, J.B. (2014), Assessing Population Growth as an Index for Housing Market in Ogoja Urban, Nigeria, International Organization of Scientific Research and Method in Education, Vol. 4, Issue 5, PP 01-06.