AN ANALYSIS OF SPATIAL INTERACTION BETWEEN ZARIA AND ITS SURROUNDING SETTLEMENTS

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Abstract

This paper examined the interaction between Zaria and its fringe settlements. Data for the research was collected from six major motor parks in Zaria, the data collected was analysed using simple descriptive statistics such as percentages and tables. The result shows that the outflow of passengers from Zaria to neighboring villages is higher than the inflow to Zaria on daily bases. Similarly, movement out of Zaria to the neighbouring villages is far more than the inflow of passengers to Zaria on market days. Also the number of passengers at each motor park depends on its distance to the neighboring villages. Finally the study suggests the need to consider daily and market days movement in addition to the distance from the neighbouring villages, while planning transportation link in the area. This will help in achieving optimality in transportation and urban planning.

Keywords – Spatial Interaction, Zaria Town, Fringe Areas.

INTRODUCTION

Spatial interaction involves exchange in space economy. It involves all types of movement generated by locational separation of supply and demand regions. It thus, involves the movement or flow of people, goods, services and information through an environmental medium. It is very crucial issue in geography and planning, as such it has attracted the attention of scholars especially in transportation geography over the years (Ullman, 1954; Irving, 1978; Knox, 1978; Rodrigeez, Comtois and Slacth, 2006). Spatial interaction therefore, provides the means for satisfaction of certain need arising from locational separation of producers and consumers.

In other words, spatial interaction depends on the reciprocal relationship between places on the earth's surface based on the principles of:

Complimentality: This has to do with demand (from deficit region) and supply (from surplus region) i.e. a product produced in region X (supply) must have a consumer in region Y (demand). Where such a situation exists, it implies that the two places complement each other, hence interaction will take place.

Intervening opportunity: This is an alternative supply source. It implies that complementarity of two areas is not a really a sufficient condition for interaction and exchange since there could be other enticing supply source. The basic principle is that all trips will w ant to remain as short as possible and will only lengthen if there is no shorter distance. Intervening opportunity is thus a spatial sponge that absorbs potential interaction between supply and demand regions.

Transferability simply refers to the ease with which interaction between two places take place or the difficulty which can prevent interaction to take place. It is the friction of distance measured in monetary cost or real time. If the cost and time of traversing a distance is too high, interaction between two places may not take place even if the presence of complimentarity and absence of intervening opportunity.

THE CONCEPT OF FRINGE

The concept of fringe has been used in diverse ways. Douglas (1998) for instance identified many synonymous terms of the fringe to include "urban fringe", "rural –urban fringe", "sub urban areas". "Suburbs", "urban periphery", extended metropolitan regions e.t.c. These various terms notwithstanding , he defined the fringe as being related to the growth of cities which lies immediately outside the designated urbanized limit and which has strong interaction with the present city and which again bears an urban demographic characteristics. Carter (1995) conceptualizes rural-urban fringe as a space into which the town extends as the process of dispersion occurs. Herington (1934) defines rural-urban fringe as the area partly assimilated into the growing urban complex which is partly rural and where many of the residents live, but are not socially and economically part of it.

These various definitions of fringe has been conceptualized into "the zonal model of rural urban fringe (Ilbery, 1985)". This model identified four zones of rural-urban fringe. These are:-

a. The inner fringe: This is the first zone where rural land is progressively converted into urban use through the approval of development processes.
b. The outer fringe:- This is the second zone containing a mixture of rural and urban land. In this zone, many properties are used for agricultural purposes or lie idle for future expansion.
c. The urban shadow: In this area, metropolitan influences emerges through commuting pattern of farmers and residents of small villages.
d. Rural hinterlands: Here, second homes, and recreational uses for urbanites are found in the mist of extensive agricultural uses and open spaces.

Of importance to this work are the third (urban shadow) and fourth (rural hinterlands) zones.

PATTERNS OF MOVEMENT

The basis of all movement is origin- destination and based on this, Robinson and Bamford (1973) identified seven types of human movement. They are:-

a. Trip making to places of work.
b. Movement within placesof workduring the course of work.
c. Educational movement by school children.
d. Marketing, shopping and business trips.
e. Social and entertainment trips.
f. Trips for no specific purpose, and
g. Movement to reach home.

These are not just form of movement, but they represent both function and process. They are functions because they maintain the status quo in spatial interaction while they represent a process when changes in their volume, intensity and direction determine growth and organization of the spatial structure.

AIM AND OBJECTIVES

The aim of this study is to examine the pattern of interaction between Zaria and its surrounding rural settlements. This aim will be achieved by these objectives:

a. To determine the volume of outflow of people fromZaria.
b. To determine the inflow of population to Zaria.
c. To ascertain the determinant of this interaction.
d. To ascertain distancefrom selected fringes to Zaria.

SCOPE AND LIMITATION OF THE STUDY

This research work is limited to the pattern of interaction between Zaria and selected villages based on data collected from four motor parks: KofanDoka, Gwargwaye, Tudunwada and SabonGari due to time and financial constraint.

THE STUDY AREA

Zaria is located in Kaduna state of Nigeria. In terms of her latitude, she is located at about 9^0-13^0 of the equator. This gives her opportunity to the climatic change that occur, Zaria area comprises of the urban centers and satellite villages, such as SabonGari, Samaru village and Zaria city herself. The major languages are Hausa, Yoruba, Igbo and English language as Lingua Franca. By religion, the people in Zaria are Muslims, Christians and Traditional worshippers.
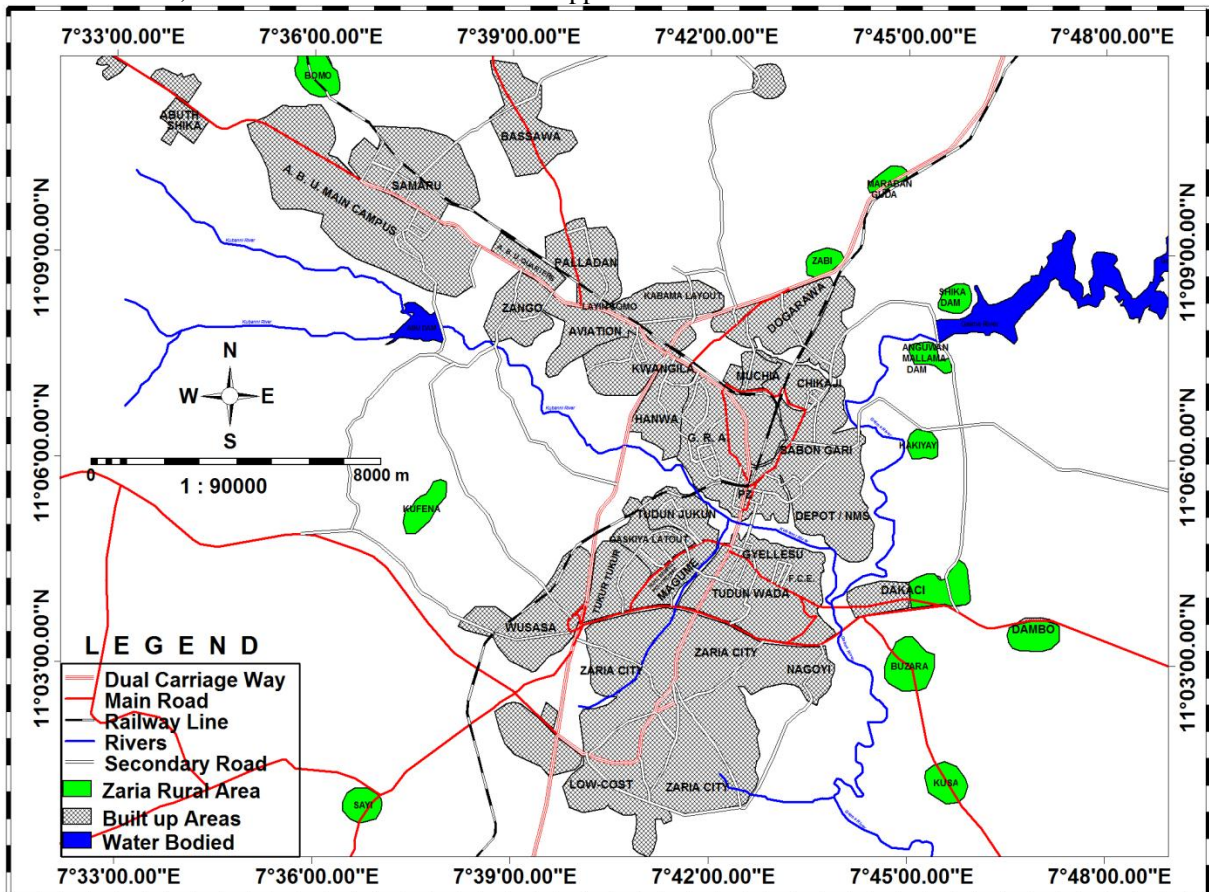
Zaria and its surrounding settlements

METHODOLOGY
Data source
The major source of data for this work is the primary data which was generated was from motor parks within Zaria over a period of six days i.e. Monday-Saturday.

Data analysis
The data collected was analyzed using simple descriptive statistics such as; tables and percentages.

Analysis and discussion of data
The data generated from motor parks within Zaria is discussed in the tables below using simple statistic, such as tables and percentages.

Table 1: Outflow of passengers from Zaria

MOTOR PARKS	Frequency	%
KOFAN DOKA	870	11.10
SABON GARI	1590	20.28
TUDUN WADA	950	12.11
KARADUA	1040	13.26
KWANGILA	2510	32.01
GWARGWAJE	880	11 .22
TOTAL	7,840	100

Source: -Field work 2015

Table 1 showed that out of 7840 people who moved from Zaria, Kwangila motor park recorded the highest outflow of 2510 (32.01%). This is followed by SaboriGari with 1590 (20.28%) followed by Karadua with population of 1040 (13.26%)) and Tudun Wada with a population of 950 (12.11%), and finally Gwargwaje with 880 (11.22%) while KofanDoka have 870 (11.10%).

Table 2: Inflow of passenger to Zaria

MOTOR PARKS	Frequency	%
KOFAN DOKA	770	11.01
SABON GARI	1440	20.60
TUDUN WADA	1390	19.1.8
KARADUA	1400	20.02
KWANGILA	1410	20.17
GWARGWAJE	580	8.29
TOTAL	6,990	100.00

Source: - Field work 2015

Table 2 showed the number of inflow to Zaria from surrounding villages. SabonGari motor park had the largest population of 1440 (20.60%) followed by Kwangila with 1410 (20.17%) while Karadua have1400 (20.02%,). Also Tudun Wada have 1,390 (19.88%), KofanDoka have 770 (11.01%) and Gwangwaje which have the lowest population of 580 (8.29%).The numbers of inflow and outflow to peri-urban center have a vital 'role to play most especially during the market days.

Table 3: Inflow of passengers to Zaria on market days

MOTOR PARKS	Frequency	%
KOFAN DOKA	1840	20.69
SABON GARI	1890	21.25
TUDUN WADA	880	9.89
KARADUA	] 860	20.92
KWANGJLA	1810	20.35
GWARGWAJE	610	6.86
TOTAL	**8890**	**100.00**

Source: - Field work 2015

Table 3 showed the amount of inflow of people from surrounding villages on market days. Information gather from the motor parks show that SabonGari had the highest population from the neighboring villages i.e 1890 (21.25%) followed by Karachi a with population of 1860 (20.92%) and Kofandoka have 1840 (20. 69%) while Kwnagila had 1810 (20.35%) and Tudun Wada had 880 (9.89%) Gwargwaje had the lowest inflow of 610 (6.86%) this shows that people often travel more on market clays to Zaria from surrounding villages to purchase goods that are not available in the village.

To determine the intensity of this interaction, there is the need to know the distance of each local government area i.e. the distance from the place of interaction to destination from the motor parks. According to the statistical year book by Kaduna state government 1996 edition, the distance from each local government in km is given as follows Makarfi 83, Soba 32, Ikara 55 and Hunkuyi 87. This is shown in Table 4

Table 4: Distance from selected Local Government Areas to zaria

MOTOR PARKS	Soba	Makarfi	Ikara	Hunkuyi
KOFAN DOKA	32km	94km	6 1 km	93 km
SABON GAR1	38km	89 km	55 km	88 km
TUDUN WADA	35km	92 km	58 km	91 km
Karadua	38km	88km	56km	87km
Kwangila	43km	83km	61km	92km
Gwargwaje	42km	94km	70km	103km

Source: - Field work 2015

Table 4 showed the nature of interaction from each motor park to their destinations. The distance from one motor park to another varies Gwargwaje has the longest to others 103km, followed by KofanDokan 93km, while Tudun Wada have 92km. The shortest interaction between all this placeis Sobawhich is 32km from KofanDoka and the longest distance 43km fromKwangila. The longest place travel is along Gwargwaje road with the distance of 103km.

TABLE 5: Weekly pattern of interaction between Zaria and its environs

1st Week	K/Doka	Neighboring village	S/Gari	N/V	T/ Wada	N/V	Karad ua	N/V	Kwang ila	N/V	Gwar gwaje	N/V
Monday	80	60	100	100	40	20	40	20	60	40	40	40
Tuesday	70	100	100	60	100	70	20	20	80	40	60	00
Wednesday	60	40	80	100	40	20	180	120	200	100	20	00
Thursday	20	80	80	60	60	120	20	100	180	120	80	20
Friday	60	40	80	40	40	40	40	20	100	40	40	20
Saturday	40	20	40	60	160	100	20	20	40	40	60	00
2nd week												
Sunday	40	40	400	280	100	60	100	60	1200	160	300	20
Monday	40	20	60	20	40	20	100	800	40	400	00	00
Tuesday	40	70	100	60	40	40	40	20	40	40	00	00
Wednesday	00	00	70	40	40	320	80	40	00	00	00	00
Thursday	200	100	100	40	00	20	20	00	120	40	40	40
Friday	00	40	160	240	80	160	160	80	160	120	80	160
Saturday	140	120	160	320	140	280	80	40	120	100	120	100
Sunday	80	40	60	20	70	120	40	40	170	170	40	00
Market day												
Makarfi Wednesday	440	180	980	530	380	240	160	160	1000	770	440	270
Hunkuyi Saturday	300	360	620	380	80	40	3280	580	300	160	120	40
Ikara Thursday	480	480	480	380	240	220	620	900	480	340	200	200
Saba Tuesday	560	820	480	600	1040	380	460	270	600	540	100	100
Total	2650	2570	4150	5850	2690	2270	5560	3260	4782	3020	1140	1190

Source: - Field work 2015

Summary, recommendation and conclusion
Summary of findings
　　Based on the data collected from motor parks the interaction between Zaria and its neighbouring villages in terms of passenger flow is high. It is about 39,132 passengers for the period of the research.

　　The volume of interaction between Zaria and its surrounding villages is higher on market days, though the daily interactions varies. Also the flow of passengers from each of the motor parks in Zaria varies according to the distance from the given park to their destinations.
　　Also analysis of interaction between Zaria and its surrounding villages revealed that distance is not a strong determinant of the intensity of interaction of peri-urban residents with the core-city; rather the level of importance of the facility to enjoy is a strong determinant.
　　Furthermore the intensity of interactions varies especially in context of their types. The major types of interactions identified in the study area are; movement of agricultural products and journeys for educational, business, medical and employment purposes.
　　Data generated from motor parks shows that people in Zaria most often used Gwangila motor park to travel to surrounding villages with inflow and outflow of *2,510* (or 32.01 %) on daily bases. This is followed by SabonGari with 1,590 (20.28%).
　　Finallyly, the inflow of people to Zaria from neighboring villages on market day is which mostly through SabonGari i.e. 1,890(21.25%) followed by Karadu'a with a population of 1,860(20.92%). One important aspect of the above analysis of pattern of interaction between Zaria and surrounding villages is that people are conscious of their environment, this because their environment have meaning to them, which influence the interaction.

CONCLUSION
　　The research shows that the outflow of passengers from Zaria to neighboring villages is higher than the inflow to Zaria on daily bases. This is because of the total passengers recorded as 784 and 6,990 passengers to the former and later respectively.
　　Similarly, a movement out of Zaria to the neighbouring villages is far more than the inflow of passengers to Zaria on market days from the neighbouring villages. The figures reveal 13,840 to 8,890 passengers. The number ofpassengers at each motor park depends on its distance to the neighboring villages.

Recommendations
　　This study suggests the need to consider daily and market days' movement in addition to the distance from the neighbouring villages, while planning transportation link in the area. This will help in achieving optimality in transportation and urban planning.

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