Assessment of Commuters' Satisfaction of Para-transit Services in North-western Nigeria

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Abstract:- This paper examined the satisfaction derived from para-transit services in some selected cities in North-western Nigeria; Kano, Kaduna and Katsina. Data were collected through accidental sampling technique from 285, 213 and 165 respondents in the cities. Data were analysed using Commuters' Satisfaction Index (CSI). Results indicated that the regional commuters' satisfaction with para-transit services was above average. Despite, specific aspects of service that had negative deviation from the mean commuters' satisfaction index were onboard speed, neatness of vehicles, working condition of vehicles, politeness of the drivers and onboard convenience with load. The results also showed that commuters' level of satisfaction with para-transit services were Kano (CSI=3.64), Kaduna (CSI=3.41) and Katsina (CSI=3.48), while the aggregate was3.59. It was established that commuters derived varying levels of service satisfaction with the three investigated para-transit modes. The aggregate commuters' satisfactions indexes for Keke NAPEP, Taxi cab and Mini buses were 4,1, 3,8 and 2.9. In accordance with the findings, the study recommended that Federal Road Safety Commission and Vehicles Inspection Officers in the region should step up their duty to enable commuter' maximum satisfaction with para-transit services.

Keywords:- Commuters Satisfaction Index, Para-Transit, Transportation, Services, Kano, Kaduna, Katsina.

I. INTRODUCTION

Transportation is a fulcrum upon which the functionality of human society rests (Ejiogu et al., 2020; Markovich & Lucas, 2011; Santos, 2009). Specifically, road transportation is one of the transportation sectors mostly affected with travel demand variations. Studies on national (Adeniran & Yusuf, 2016; Trimbath, 2014), regional (Jolaoye, 2019; Lanrewaju, 2012) and urban (Aljoufie et al., 2011; Duranton & Turner, 2012) economics impact of transportation are pointers to the unequalled roles of transportation to the quality of life; recreation, education, social, businesses. Demonstrated by its high flexibility and the unique capability to provide door-to-door services (Denant-Boèmont & Hammiche, 2010), roads transportation has been seen as the backbone of transportation systems. On the whole, great part of short and medium-distance movements are made through roads and most long-distance movements start and end up with a road journey. Furthermore, the dynamism and complexity of urban activities, all over the globe, is increasingly inseparable from service quality derived from para-transit services (Kirby & Miller, 2019; Wongwiriya et al., 2020). For instance,

Oluwole (2017) opinionated that an effective and efficient para-transit services is symbolic to human existence.

Lack of modality and standardization in the operation of mass transit in Nigeria has led to its' collapse. As a result, besides private automobiles and walking, the most used means of transportation is public transport; para-transit, which includes minibus, taxi, Keke NAPEP and motorcycles. Time immemorial, para-transit has enjoyed the support of the government (federal, state and local) through subsidization of both capital and operating costs (Anas et al., 2020; Simon, 2021; Rimmer, 1980) and there are a number of privately owned operators resulting in greater diversity in service provision.

Extant literature on para-transit operation in Nigeria covers a wide spectrum of the subject. This include: the determinants of patronage (Ademola et al., 2020; Babatunde, 2012; Oluwole, 2017), effectiveness of service (Aderamo, 2011; Adeyinka, 2014; Kalu, 1998) and problems and challenges (Onokala & Olajide, 2020) bedevilling the services in the nation. Commuters' satisfaction with para-transit service is viewed as a critical area that deserves investigation. Empirical works on commuters' satisfaction with para-transit services at cities' level (Aderamo, 2011; Ali, 2011; Kalu, 1998; Oluwole, 2017) in Nigeria abound in literature. However, literature is scanty on the subject at regional level; as a result, this study was designed to investigate commuters' satisfaction with para-transit services in north-western Nigeria. Two areas are conceived paramount to this task. One, the analysis of the satisfactions derived by commuters in some aspects of para-transits' service delivery. Secondly, a comparison of commuters' satisfaction in the selected cities equally deserves attention. This is with the view to promoting sustainable transport development for the cities particularly in Nigeria. The para-transit mode covered in the study are Mini bus, Taxi cabs and Keke NAPEP. Commercial motorcycles were excluded in the study because some state government have banned their operation due to banditry and kidnapping in the region; with the notion that the mode is commonly adopted in perpetrating the vices.

II. THE STUDY AREA

This study was conducted in Kano, Kaduna and Katsina; north-western Nigeria. Geographically, Kano is located between latitude 11°59' and 12°02' N and longitudes 8°24' 30" and 8°40' 00"E, Kaduna between latitude 10°31'20.06"N and longitude 7°26'17.81"E and Katsina between latitude 12°59'21.95"N and 7°36'2.27"E (Figure 1). These cities were made up of eight, two and one local government areas respectively. The latest official population figure by national

census (National Population Commission, 2006) of Kano, Kaduna and Katsina were two million, eight hundred and twenty-eight thousand, eight hundred and sixty-one, seven hundred and sixty thousand and eighty-four and three hundred and eighteen thousand , four hundred and fifty-nine accordingly. However, using the official population growth rate of 3% for urban centres in Nigeria, the population of the cities have been reviewed to 3, 626, 068 (Kano), 1,158,000 (Kaduna) and 497,304 (Katsina) respectively in 2021 (World Statistic Data, 2021). This study focused m a i n l y on Kano, Kaduna and Katsina; with exceptions of all the hinterland settlements around the respective state capital cities.

In the north-western region, Kano, Kaduna and Katsina states share boundary with each other and some other states. The study area is equally the state capital of the states. Kano metropolis is popularly recognized as a commercial city while Kaduna as an institutional centre of the nation. Katsina is also a typical ancient city in the region. Apart from been connected to other neighbouring country by roads, the cities have recently experienced a boom in road infrastructure projects execution. This has notably translated to boom in the operation of para-transit. Does this boom translate to commuters' satisfaction is therefore the underpinning research question of this study.
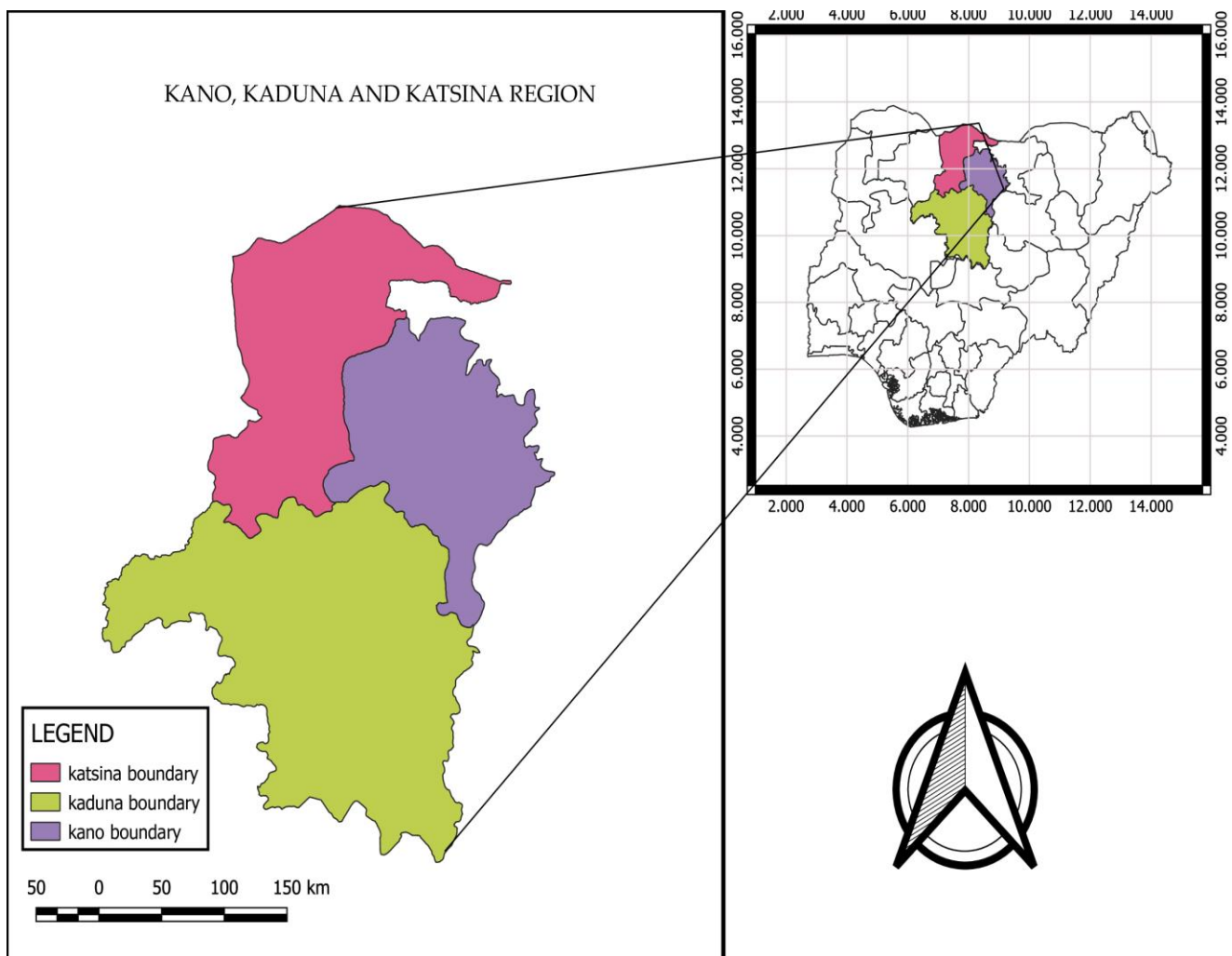

Fig 1:- The study area
Source: GIS Laboratory, Department of Urban and Regional planning, Hussaini Adamu Federal Polytechnic, Kazaure.

III. MATERIALS AND METHODS

Data for this study were collected through the use of close-ended questionnaire. The questionnaire was designed to gather information on commuters' perception of nine domains of the services rendered by para-transit operators in the selected cities of the region. In addition, Kano, Kaduna and Katsina states maps (the study area) was produced in the ArcGIS environment to show the geographical coverage of the study area.

Accidental sampling technique was adopted for this study. This was informed by the inevitability of para-transit service to individual; irrespective of status and city wide operation of the para-transit modes. In as much this study was not constructed to investigated the determinants of satisfaction, accidental sampling technique is deemed suitable (Etikan et al., 2016). The sample size for Kano (285), Kaduna (213) and Katsina (165) were arrived at by considering the current total population of the cities in

accordance with (Krejcie & Morgan, 1970; Rahman, 2019) specifications at the 95% level of confidence. Data were analysed using Respondents' Satisfaction Index (RSI) to assess commuters' level of satisfaction with the service of para-transit in the three selected cities. Respondents' levels of satisfaction with the para-transit services were investigated with nine variables. These include waiting time, onboard speed, ubiquity and neatness and working condition of the mode. Other aspects were the ability of para-transit to reach the final destination of commuters, neatness of operators, politeness of operators and commuters onboard convenience with vehicle loading. Likert scale was adopted for rating commuters' satisfaction in the nine aspect mentioned. The ratings were in descending order of importance as: (very satisfied = 5, satisfied = 4, just satisfied = 3, not satisfied = 2 and not concerned = 1). If the number of respondents rating a characteristic i is denoted by pi and Vi is the weight assigned to characteristic i, therefore, total weight value (TWV) for each characteristic was obtained through the summation of the product of the number of responses for each rating to an attribute and the respective weight value. This can be represented as:

$$TWV = \sum_{i=1}^{5} PiVi \qquad (Eq. 1)$$

Therefore, the Respondents' Satisfaction Index (RSI) was calculated using:

$$CSI = \frac{TWV}{\dfrac{5}{\sum_{9}^{i=1 pi,}}} \qquad Eq. 2)$$

Where CSI is the commuters' satisfaction index.

IV. RESULTS AND DISCUSSION

A. Level of satisfaction with the services of para-transit

Table 1 shows the assessment of commuters' satisfaction with services delivered by para-transit operations in Kano, Kaduna and Katsina. This was obtained by summing up the CSI for each aspect of para-transit services and dividing the summation by the number of the identified activities (n=9). Thus, the aggregate satisfaction for Kano para-transit services (CSI_{kan}$) was 3.64. Similarly, the obtained aggregate satisfaction for Kaduna para-transit

services (CSI$_{kad}$) was 3.41 while that of Katsina (CSI$_{kat}$) was 3.48. The regional aggregate commuters' satisfaction with para-transit services (CSI$_r$) was 3.59. From these figures, it could be deduced that the level of satisfaction from the services of para-transit operation in the three selected cities were above average. It is equally observed that the highest (3.64) aggregate satisfaction of para-transit services was derived in Kano. This probably signified the central place roles Kano Metropolis perform within the region.

Also, the table 1 shows the average RSI for each aspect of para-transit operation activities. Analysis of findings showed that four aspects of para-transit services had negative deviation about CSI in Kano. These include onboard speed of vehicles (-0.16), neatness of vehicles (-0.25), working condition of vehicles (-0.05) and onboard convenience with load (-0.45). The much deviated characteristic from the mean was onboard convenience with load. This was also noted by Agbonkhese et al. (2013) and Gbadamosi (2015) that drivers' attitude in overloading vehicles causes inconveniences and road traffic accident. In Kaduna, three aspect of para-transit service displayed deviation from the mean commuters' satisfaction index. They were onboard speed (-1.61), reaching commuters' destination (-0.17) and politeness of operators (-0.04). This shows that commuters were much unsatisfied with para-transit onboard speed. This could be due to on-route loading and offloading. Furthermore, of the nine aspects of para-transit services investigated in Katsina, four were negatively deviated from the CSI mean. These were onboard speed, ubiquity of para-transit modes, working condition of vehicle and politeness of operators. The respective mean deviation value of commuters' satisfaction index for these variables were -0.45,-0.22, -0.19, and -0.48. The results also revealed that in Kano, Kaduna and Katsina, commuters were unsatisfied with the onboard speed of para-transit services. This was also buttressed by the analysis of para-transit commuters' satisfaction on regional base (Table 2) which yielded -0.14 commuters' satisfaction index for onboard speed. This finding was in support of Agbonkhese et al. (2013), Bun (2012), Nuruddeen and Siyan (2016), Oluwaseyi and Kolawole (2017) and Onokala and Olajide (2020) that earlier discovered the primacy of excessive speed in road traffic accident. In addition to this quality were neatness of vehicles, working condition of vehicles, operators' attitude in reaching commuters' destinations, politeness of operators and onboard convenience with load. These qualities were away from the commuters' satisfaction index value -0.11, -0.09, -0.02, -0.14 and -0.09 respectively.

Table 1: Level of commuters' satisfaction with para-transit services in the selected cities

Aspects of Service Delivery	Cities											
	Kano				Kaduna				Katsina			
	TWV	x_{kan}*	$\overline{x_{kan}} - x_{kan}$	$(\overline{x_{kan}} - x_{kan})^2$	TWV	x_{kad}**	$\overline{x_{kad}} - x_{kad}$	$(\overline{x_{kad}} - x_{kad})^2$	TWV	x_{kat}***	$\overline{x_{kat}} - x_{kat}$	$(\overline{x_{kat}} - x_{kat})^2$
Waiting time	3448	3.70	0.05	0.0025	2671	3.70	0.29	0.0821	1921	3.60	0.11	0.0128
Onboard speed	3221	3.49	-0.16	0.0256	2314	1.804	-1.61	2.5903	1656	3.04	-0.45	0.1995
Ubiquity	3502	3.87	0.22	0.0484	2543	3.537	0.12	0.0152	1830	3.27	-0.22	0.0469
Neatness of vehicle	3391	3.40	-0.25	0.0625	2484	3.60	0.19	0.0348	1967	3.52	0.03	0.0011
Working condition of vehicle	3338	3.60	-0.05	0.0025	2543	3.60	0.19	0.0348	1787	3.30	-0.19	0.0348
Reaching commuters destination	3276	3.70	0.05	0.0025	2310	3.24	-0.17	0.0300	1415	4.00	0.51	0.2635
Politeness of the operators	3480	3.77	0.12	0.0144	2327	3.37	-0.04	0.0018	1688	3.01	-0.48	0.2272
Neatness of operators	2608	4.10	0.45	0.2025	1852	4.07	0.66	0.4310	1430	4.04	0.55	0.3061
Onboard convenience with load	3009	3.20	-0.45	0.2025	2702	3.80	0.39	0.1494	2013	3.60	0.11	0.0128
Total		**32.83**		**0.6187**		**30.72**		**3.3697**		**31.38**		**1.105**

Source: Field research, 2022

Note:

* $\sum pi = 285$

** $\sum pii = 213$

*** $\sum piii = 165$

X_{kan} = CSI$_{kan}$ (Commuters' satisfaction index for Kano)

X_{kad} = CSI$_{kad}$ (Commuters' satisfaction index for Kaduna)

X_{kat} = CSI$_{kat}$ (Commuters' satisfaction index for Katsina)

Table 2: Combined Response at Regional Level

Aspects of Service Delivery	TWV	x_r****	$\overline{x_r} - x_r$	$(x_r - \overline{x_r})^2$
Waiting time	8040	3.67	0.08	0.0064
Onboard speed	7191	3.45	-0.14	0.0196
Ubiquity	7875	3.60	0.01	0.0001
Neatness of vehicle	7842	3.48	-0.11	0.0121
Working condition of vehicle	7668	3.50	-0.09	0.0081
Reaching commuters destination	7001	3.57	-0.02	0.0004
Politeness of the operators	7495	3.45	-0.14	0.0196
Neatness of operators	5890	4.09	0.50	0.25
Onboard convenience with load	7724	3.50	-0.09	0.0081
Total		**32.31**		**0.3244**

Source: Field research, 2022

Note:

**** $\sum pi - iii = 663$

X_r = CSI$_r$ (Commuters' satisfaction index for the region).

Further analysis was carried out on performance of the three modes of para-transits in each of the cities (Table 3). The table shows that commuters derived highest satisfaction in the services of Keke NAPEP in Kano, Kaduna and Katsina. This was demonstrated by the highest Total Weight Value (TWV) scores of the para-transit mode in each of the nine variables of services considered. Similarly, commuters' satisfaction indexes for Taxi cabs in Kano, Kaduna and Katsina were 3.9, 3.8 and 3.7. These, despite not the highest, were notably above the mean commuters' satisfaction value. Mini buses contributed the least satisfaction index in the region, 3.0, 3.1 and 2.7 commuters' satisfaction indexes were derived from Kano, Kaduna and Katsina.

B. Level of Satisfaction of Para-transit Services by Cities

The contents of table 3 also revealed the variations in the level of satisfaction derived by commuters in the study area. Taking aggregate satisfaction as the summation satisfaction index of the three para-transit modes in each city divided into 3, Kano and Kaduna commuters derived aggregate satisfaction index of 3.66 while Katsina commuters enjoyed a mean satisfaction of 3.5. This finding supports Barau (2006), Farrell (2018) and Ibrahim (2018) that had earlier the superiority of Kano and Kaduna in north-western region.

Table 3: Commuters' Para-transits Satisfaction Indexes by Cities and Modes

CITY	TRANSPORT MODE	CHARACTERISTICS SCORES									Satisfaction Rating
		Waiting Time	Onboard speed	Ubiquity	Neatness of vehicles	Working condition of	Reaching ones destination	Politeness of operators	Neatness of operators	Convenience with load	
KANO	Taxi cab	773	1255	1233	985	1173	1171	1197	1150	1037	3.9
	Keke NAPEP	985	1086	1261	1347	1239	1314	1201	1302	838	4.1
	Bus	794	880	1008	1061	926	791	1082	156	875	3
KADUNA	Taxi cab	636	629	884	865	856	777	811	860	875	3.8
	Keke NAPEP	558	824	955	934	936	871	887	919	893	4.1
	Bus	617	861	704	685	751	662	629	73	995	3.1
KATSINA	Taxi cab	585	578	619	658	536	647	542	658	687	3.7
	Keke NAPEP	734	549	665	681	717	710	620	710	700	4.1
	Bus	466	529	546	628	534	58	526	62	636	2.7

Sources: Field research, 2022

V. CONCLUSION

This study investigated commuters' satisfactions with para-transit operation services in Kano, Kaduna and Katsina; north-western Nigeria. The study relied on data collected through structured questionnaire, administered to commuters on the basis of willingness to respond (convenience sampling). In summary, across the region, the commuters were highly dissatisfied with the onboard speed of para-transit modes of transportation. Para-transit operators engaged in excessive speeding in order to gain more daily income but this had had inestimable consequences on the life of commuters, as established by other study. The study also discovered that neatness and working condition of vehicles, attitude of operators toward reaching desired destinations of commuters, politeness of operators and onboard convenience with load were qualities of para-transit services which have negative deviation with the mean value of satisfaction index.

As a result, the study recommends a more strict enforcement of speed limit enforcement for the para-transit operators by the Road Safety Corps in the study area. Any drivers who engage in excessive speed should be duly punished. The Vehicle Inspection Officers should also ensure that vehicles operating in the region merit road worthiness and are neatly maintained. In addition, workshop should be occasionally conducted for the drivers on how to properly relatewith passengers on board.

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