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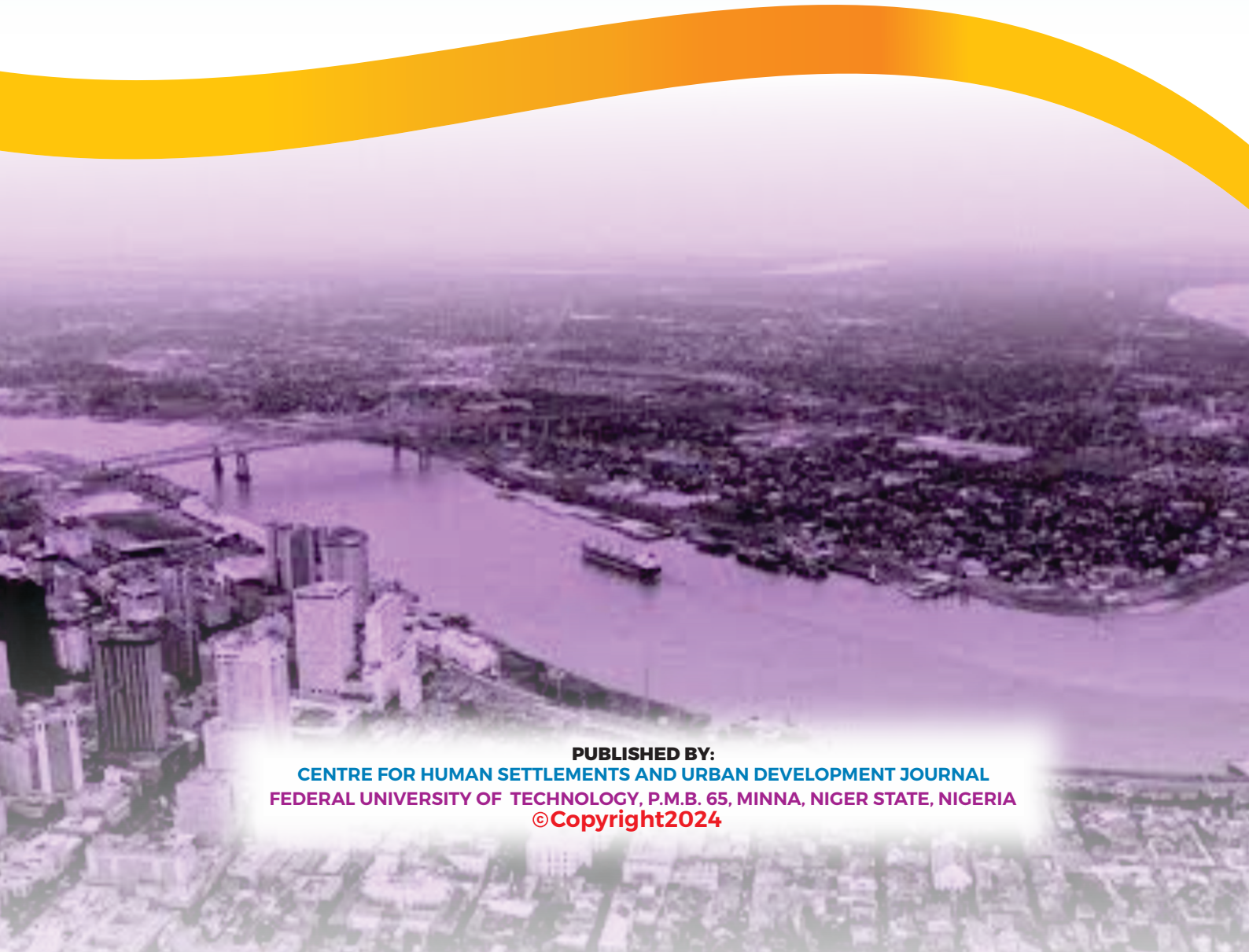

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OWNERSHIP STRUCTURE AND OPERATIONAL SAFETY EFFICIENCY OF COMMERCIAL MOTORCYCLE AND TRICYCLE OPERATIONS IN MINNA, NIGERIA

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Abstract

The tricycle (Keke-NAPEP), the government's poverty alleviation initiative, is a rapidly developing paratransit alternative in Nigeria. Due to the lack of an urban transportation strategy, alternatives such as tricycles and motorcycles have grown in popularity. This study compares the two modes of paratransit for commercial operation to determine how their unique qualities, notably ownership, affect their long-term viability. A cross-sectional study was conducted among 96 tricycle and 180 motorcycle operators in Minna using a questionnaire and a non-probabilistic sampling approach. Descriptive statistics and chi-squared analysis were used to analyse the data. Statistically significance difference was found between the Owner - operated paratransit (tricycle ₦4,860.98; motorcycle ₦3,503.64) who make more profit than the non-owner operators (tricycle ₦2,200; motorcycle ₦1,755.17). In terms of maintenance costs, a tricycle (Mdn = ₦5,000 per month) costs more than a motorcycle (Mdn = ₦4,000). Furthermore, more tricycles (89.58%) than motorcycles (33.33%) had their two side mirrors intact and so also the two trafficators (tricycles 90.63%; motorcycles 76.19%). Approximately 14% of motorcycle operators thought their mode was unsafe, compared to 0.56 % of tricycle users. We suggest that the government build a pathway for soft lending programmes to stimulate the acquisition of tricycles for business transportation, as well as upgrade the downtown road network to entice tricycle operators to fill the void left by the enforced ban on motorcycle transportation.

Keywords: Commercial transport, Paratransit operation, Motorcycle, Tricycle, Profitability, Poverty alleviation

1.0 Introduction

The absence or failure of sustainable urban transport policy has led to the emergence and preponderance of motorcycles and tricycles as alternatives to mass transit transportation system in many developing countries. Motorcycles and tricycles are sometimes distributed to the electorates by politicians as means of poverty alleviation or empowerment. Indeed, tricycle called *Keke NAPEP* in Nigeria is one of the core instruments for government poverty alleviation programme in Nigeria. The origin of tricycle as a means of public transport in Nigeria has been traced to the 2001 National Poverty Eradication Programme (NAPEP) of the federal government of Nigeria. According to Ipingbemi and Adebayo (2016), the tricycle was first deployed as a means of commercial transportation in Lagos during the Buba Marwa tenure as governor of Lagos State between 1996 and 1999. It is seen as a better alternative to commercial motorcycles which has been banned or restricted in many state capitals in the country. Several studies (including Oluwadiya *et al.* 2009; Sangowawa *et al.*, 2010; Nwaogbe, Ibe and Ukeagbu, 2012; Ipingbemi and Adebayo, 2016) have been carried out on the various dimensions of these two para-transit modes. Ehebrecht and Dirk (2018) have noted that for the motorcycle mode alone, large share of researches has yielded valuable insights into its different aspects however, only few comprehensive overviews of motor-taxis and their service characteristics exist. The aim of this present study is to do a comparative analysis of both modes of commercial

operation with a view to understanding how their specific characteristics, particularly ownership, influence their sustainability. It is postulated here that ownership will influence level of profitability and accident experience of the operators. As part of the study, the following research questions were set for determination:

(1) What is the ownership pattern of both mode of transportation?
(2) Are the profit margins of operators and the sustainability of operation influenced by ownership type?
(3) Is the vehicle maintenance regime of both modes influenced by ownership pattern or type?
(4) How do the operators of the two modes perceive their operation safety?
(5) Are operators' accident experiences influenced by ownership pattern?

It is postulated that ownership will influence level of profitability and accident experience of the operators. This study is guided bt the need to determine the ownership pattern of both mode of transportation, the profit margins of operations and the sustainability of operations influenced by ownership type, the vehicle maintenance regime of both modes influenced by ownership pattern or types, how do the operations of the two modes perceive their operation safety, and are operator's accident experiences influenced by ownership pattern?

2.0 Review of Related Literature

Transportation is an integral part of human society. Over the years, numerous para-transit modes have emerged in Nigeria to meet the transportation needs of her rising population. Various studies have been carried out on para-transit modes in Nigeria. These studies were focused on safety (Aluko, 2018; 2022; Ukwayi *et al*., 2013), the choice and satisfaction of commuters (Busari *et al*., 2021; Jolaoye *et al*., 2022; Ubani and Ugwu, 2015), and the quality of operation (Oladeji and Agbabiaka, 2021).

These authors have used different approaches to address the subject of paratransit modes. For instance, Aluko (2018) in his study on commercial motorcycle safety in Nigeria assessed safety in terms of shared motorcycles involved in a traffic accident in the country. In achieving the aim of his study, the emergence of commercial motorcycles, the importance of motorcycles, and the safety challenges of commercial motorcycles in Nigeria were examined. Aluko's (2018) study reveals an increasing trend in the percentage of commercial motorcycle accidents in Nigeria. His study was solely based on a review of existing literature. Unlike Aluko's (2018) study that addressed the safety of commercial motorcycles from the perspective of road traffic accidents, Ukwayi *et al*. (2013) examined the safety of commercial motorcycles from the perspective of criminality. Ukwayi *et al*. (2013) opined that commercial motorcyclists were involved in various crimes ranging from petty crimes (such as handbag and telephone snatching) to more dangerous crimes (armed robbery, rapes, kidnapping and suicide bombing). High levels of unemployment and poverty were attributed to the actions of commercial motorcyclists that perpetrate these crimes.

Using the commuter's satisfaction index, public transport para-transit which includes Keke Napep (tricycle), cab, and buses, were examined in three Nigerian cities (Kano, Kastina, Kaduna) by Jolaoye *et al*. (2022). Indicators used to investigate the commuter's satisfaction were on-board speed, waiting time, ubiquity, neatness of vehicle, condition of the vehicle, neatness of operator, the attitude of the operator, and reaching commuter's destination. The study reveals that the satisfaction derived by commuters from para-transit operations in Kano, Kaduna, and Katsina were all above average (Jolaoye *et al*., 2022). In a similar study by Ubani and Ugwu (2015), speed, safety, cost, appearance, comfort and schedules of para-transit means were the

indicators used to examine commuters' satisfaction with para-transit modes. The Principal Component Analysis (PCA) and the Analysis of Variance (ANOVA) were used to analyse the data collected. The study reveals that there is a statistically significant difference in the performance of commercial tricycle services as measured by the aforementioned indices. The study by Ubani and Ugwu (2015) further reveals that appearance, speed, safety, cost, scheduling, and comfort attracted passengers to use commercial tricycles in Enugu.

On the choice of commuter's para-transit modes, Busari *et al*. (2021) hold forth that a large percentage of commuters in Lagos State adopted using different para-transit modes for a work trip on the grounds of availability. Also, the unmarried prefer particular para-transit modes for work trips. The study by Busari et al. (2021) employed domiciliary information techniques for data collection. Furthermore, the bivariate analysis was conducted to concurrently determine the relationship between the frequencies of commuters using para-transit modes and their age range. In the same vein, authors have also studied the operation and quality derived from the use of para-transit modes by both the operators and the commuters. In studying the quality and operation of para-transit modes, Nwaogbe et al. (2012) were of the view that a high proportion (92%) of the operators of the para-transit modes in Aba believed the deteriorating nature of the road network was a strong factor affecting the operation of para-transit mode (tricycle). On the contrary, Oladeji and Agbabiaka (2021) revealed that inadequate vehicle maintenance, the use of rickety vehicles, and the desire to maximise profit by the operators have a negative impact on the quality of para-transit modes. The Chi-Square model corroborated with primary and secondary data sources were used by Nwaogbe et al. (2012). Instead of the Chi-square model, the study by Oladeji and Agbabiaka (2021) utilised a correction model to substantiate the data from the primary and secondary sources employed.

This study therefore, compare the two modes of commercial operation of para-transit (tricycle and motorcycle) with a view to understanding how their specific characteristics, particularly ownership, influence their sustainability.

3.0 Research Methodology

3.1 The Study Area

The study area is Minna, the capital city of Niger State, is a medium sized-city in north central Nigeria. It is one of those cities that had their origins and growth to the early influence of the construction of the railway during the colonial period. Although it became the capital of Niger State in 1976, it has since grown rapidly into a modern medium-sized city with a large resident from diverse areas of the country. It buzzling commercial and social activities have influenced the rising demand for transportation means among its residents. Minna comprised of not less than 24 different neighbourhoods, some of which are not adequately linked by roads, thereby warranting the use of unconventional public transport like the motorcycle and tricycle by of its residents. Before the ban on the use of motorcycles as means of commercial mode in year 2020, it has gained acceptance amongst the teeming residents of the city, particularly as a result of its flexibility. This mode was later replaced by the tricycle after the State government banned its use as a means of commercial transportation following its wide usage by criminal elements, rising cases of insecurity and the associated high rate of accidents in the city.

3.2 Methods

A cross-sectional study using questionnaire was carried out in Minna. The loading bays where commercial motorcycles and tricycles cluster were identified during a reconnaissance survey by the research assistants. Non-probabilistic sampling technique was followed as the population

was indeterminable. The study was conducted from 8.00 a.m. to 6.00 p.m. to enable part-time operators of the commercial transport to be captured. In all, responses from 96 tricycles and 180 motorcycle operators were accepted and analysed. For the nominal variables in the data collected, descriptive and inferential statistics like frequency and chi-squared analysis were used. The strength of association between the variables used in Chi-squared analyses were measured using Crammer's V which is interpreted as follows Small – 0.1, Medium – 0.3 and Large – 0.5 (DATAtab ,2022).

4.0 Results

4.1 Characteristics of the Respondents

4.1.1 Educational level

The business of commercial motorcycle or tricycle operation is open to both the educated and less educated operators with the well-educated dominating. A total of 31% of the motorcyclists and 47% of tricyclists had secondary education while for tertiary education it is 10% and 14% respectively. About 90% of operators registered with their respective Unions. As can be inferred from Table 1, 59.38% of the tricycle operators had been in the business for over three years while the corresponding value for the motorcycle operator is 57.14%.

Table 1. Characteristics of the Para-Transit Operators.

Variables	Tricycle (Keke)		Motorcycle		Total	
	Count	%	Count	%	Count	%
Education level						
No education	4	4.17 %	7	8.33 %	11	6.11 %
Primary	15	15.63 %	27	32.14 %	42	23.33 %
Quranic	12	12.50 %	15	17.86 %	27	15.00 %
Secondary	45	46.88 %	26	30.95 %	71	39.44 %
Tertiary	13	13.54 %	8	9.52 %	21	11.67 %
Vocational	7	7.29 %	1	1.19 %	8	4.44 %
Registered						
No	5	5.21 %	9	10.71 %	14	7.78 %
Yes	91	94.79%	75	89.29 %	166	92.22 %
Years in operation						
Less than 6 months	3	3.13 %	8	9.52 %	11	6.11 %
6 months to 1 years	11	11.46 %	6	7.14 %	17	9.44 %
Over 1 but < 2 years	8	8.33 %	12	14.29 %	20	11.11 %
Over 2 years but < 3 years	17	17.71 %	10	11.91 %	27	15.00 %
Over 3 years but < 4 years	10	10.42 %	11	13.10 %	21	11.67 %
Over 4 years but < 5 years	14	14.58 %	6	7.14 %	20	11.11 %
5 years and above	33	34.38 %	31	36.91 %	64	35.56 %
Total	96	100.00 %	84	100.00 %	180	100.00 %

NOTE: The mean age of the tricycle operators was found to be 33.63 years (Median=33, SD=7.67) while that of the motorcycle operator was 33.76 years (Median = 30.5, SD = 9.64).

4.2 Cost of Motorcycles and Tricycles

Motorcycles and tricycles are imported into the country through the Lagos Port and transported by lorries and trailers over 600 kms by road to Minna. The cost of the various brands of motorcycle was found to have increased between 150% and 237% from 2014 to 2022 as shown in Table 2.

Table 2. Costs of Motorcycles and Tricycles in Minna

Motorcycle	Cost ₦			Tricycle	Cost ₦		
	2014	2022	% increase		2014	2022	% increase
Jincheng AX100	85,000	250,000	194	Bajaj	380,000	850,000	124
Bajaj Boxer	112,000	280,000	150	Sinoki	365,000	Search online	-100
Qlink	95,000	320,000	237	Piaggio	400,000	750,000	88
Haojue	110,000	345,000	214	TVS King	405,000	650,000	60
Royal	105,000	260,000	148	Bajaj	385,000	850,000	121
Daylong	95,000	300,000	216	Mahindra	430,000	Search online	-100

Source: Authors' fieldwork 2014 and 2021

Table 3 shows the cost of selected spare parts for both para-transit systems with the tricycle parts more than double that of motorcycle in some cases. It should be noted that some tricycle parts are not usually available in the study area and have to be brought in from either Abuja or Lagos. These (cost and availability of spare parts) have implications for profit level of the operators.

Table 3. Costs of Major Motorcycle and Tricycle Spare Parts

Spare Parts	Prices (₦)		Spare Parts	Prices (₦)	
	Motorcycles	Tricycles		Motorcycles	Tricycles
Tube	Front tyre (700 – 1000) Back tyre (600 – 900)	630 - 650	Clutch cable	350	2800
			Valve oil seal	200	500 – 600
Tyre	Front (3000 – 2800) Back (4200 – 4000)	6500	Exhaust gasket	50	50
			Fuel filter	100	Not available
Piston and ring	1000 - 1200	1500	Speedometer cable	300	Not available
Battery	3000	Big size (11000) Small size (5300)	Gauge	100	Not available
			Insulator	Not available	Not available
Carburettor	3500	Original (12500) Small size (6300)	Capacitor	Not available	Not available
			Starter	1100 – 1200	1000 – 1300
Shoe brake	450 - 600	500 - 1300	Relay	Not available	Not available
Air filter	1500 - 1800	1800	Connector ring	1800 Complete set (2700)	1400 – 1900
Oil filter	50	500, 1000 (type of brands)			
Head lamp	2200 – 2500	Not available	Engine oil for service	1500	Minimum – 1000
Throttle cable	350 – 400	1500	Mechanic workmanship	Minimum – 2000. Also, can be negotiated.	Negotiated according to the tasks and level of maintenance (minimum common price – 2000)

Source: Authors' fieldwork, 2021

4.2.1 Ownership

It was found that it is easier to own motorcycle than tricycle as more of the motorcycle mode (65.48%) is owned by the operators compared to tricycle (43.16%) and acquisition through hire-purchase basis is higher among the tricycle (36.96%) than among the motorcycle operators (14.63%) as shown in Table 4. Over 60% of the operators of both modes were engaged in other jobs for economic survival.

Table 4. Costs of Major Motorcycle and Tricycle Spare Parts

Variable		Tricycle		Motorcycle		Total
		n	%	n	%	n
Ownership	The owner	54	56.84	29	34.52	83
	Non-owner	41	43.16	55	65.48	96
	Total	95	100	84	100	179
On hire purchase	No	58	63.04	70	85.37	128
	Yes	34	36.96	12	14.63	46
	Total	92	100	82	100	174

Source: Authors' fieldwork, 2021

4.3

Profit Margin of the Operators of both Para-transit Systems

It was observed during the study that the daily profit margin (or income) of the operators of both modes of transport systems depends on a number of variables, particularly, operating hours, ownership type or status, maintenance cost, levies/charges/other payments and extortions by security personnel and touts.

4.3.1 Income or Delivery to Owners

The study revealed that the amount of money delivered to the owner varies widely depending on whether the arrangement is the "hire purchased" type or daily returns. In the case of "hire purchased", the owner buys the vehicle, adds some expected profit margin or gain to it and give it out to another person to operate and pay back within agreed specified time period. In such instance, the operator works extra hard to beat the repayment time period and liquidate the money (cost of vehicle), hence daily return to the owner is usually higher (Table 5). This study however, revealed that operators of tricycles on "hire purchased" are required to pay back mean sum of N897,647.00 (*Mdn=N1,000,000, SD = N330326.37*) while the corresponding value with motorcycle was N391,000.00 (*Mdn = N385,000.00, SD = N293,612.61*). The standard variation is high because the amount to be paid back depend on whether the vehicle was brand new one or fairly used. Also, for daily returns term, amount delivered (returns) per day to the owner varied from an average of N2,609.26 (*Mdn = N2,000, SD = N2,295.63*) for tricycle and N1,528.28 (*Mdn =N1,000, SD = N1,617.15*) depending on whether the vehicle is new or fairly used.

Table 5. Returns to Owners

	Returns (₦) per day to the Owner			
	"Hire Purchased" Term		Not the owner	
	Keke (tricycle)	Motorcycle	Keke (tricycle)	Motorcycle
N	34	12	54	29
Mean	897647.06	391000.00	2000.00	1000.00
Median	1000000.00	385000.00	2609.26	1528.28
Standard deviation	330326.37	293612.61	2295.63	1617.15

Source: Authors' analysis of data 2022

4.3.2

Charges

The operators of these paratransit pay various levies and charges. Some of these are on one-off basis while others are on daily basis. Various amounts paid range from about ₦50.00 to ₦500.00 depending on the mode as shown in Table 6. It was also observed that while tricycle operators spend about ₦6,000.00 monthly on maintenance, the motorcycle operators spend an average of ₦4,200. Other charges include Jacket, Market sticker, Gate pass, Local government ticket and Loading/ Garage fee. Others are Campus Shuttle registration, State sticker, ID card, plate number and Environmental sanitation.

Table 6. Levies pay by Paratransit Operator

Variables	Modes	Frequency	Median	Mean	Std. Deviation
How much did you pay for union identity card?	Tricycle	96	198.5	202.30	58.61
	Motorcycle	84	197.5	202.55	63.82
How much did you pay for the branch sticker?	Tricycle	96	500	585.10	439.07
	Motorcycle	84	400	426.79	319.68
How much did you pay for the Local Government sticker?	Tricycle	96	500	528.13	345.79
	Motorcycle	84	400	426.79	319.30
How much are you paying for the daily Union levy?	Tricycle	96	100	98.96	58.37
	Motorcycle	84	50	65.83	52.278
How much, on the average do you spend monthly of vehicle maintenance?	Tricycle	96	5000	6094.27	3997.999
	Motorcycle	84	4000	4200	2437.656

Source: Authors' analysis of data 2022

4.3.

3 The Profit Margin

The mean profit margin personal (Table 7) to the tricycle operators who work for others called "The Owner" was found to be N2,200 (*Mdn = N2,000, SD = N1159.54*) while that of motorcycle operators was N1,755,17 (*Mdn =1,500, SD = N958.64*). On the other hand, the profit for the owner-operated tricycle was N4,860.98 (*Mdn = N4,000, SD = N2213.02*) and that of the owner-operated motorcycles was N3,503.64 (*Mdn = N3,000, SD N2,361.89*). A one- tailed test for the difference in the profit margin of both operators was performed. The non -owner tricycle operators were found to have higher profit margin (*Mdn* = 2,000) than the non-owner motorcycle operators (*Mdn* =1,500). Mann-Whitney U-Test showed this difference was not statistically significant (*U*

= 625, p = .126, r = 0.17). However, a similar test for the owner operated for the two modes showed that the tricycle operators made more money per day (*Mdn* = 4,000) than the motorcycle operators (*Mdn* = 3,000). Mann-Whitney U-Test showed this difference was statistically significant (U = 638.5, p = <.001, r = 0.37).

Table 7. Mean Profit Margin of para-transits Operator

Variables		Profit Margin(₦)	
		Tricycle (Keke)	Motorcycle
Gain per day for non-owners	Mode	1500	2000
	Median	2000	1500
	Mean	2200	1755.17
	Std. Deviation	1159.54	958.64
	Minimum	700	300
	Maximum	5000	5000
Gain per day for owners	Mode	4000	3000
	Median	4000	3000
	Mean	4860.98	3503.64
	Std. Deviation	2213.016	2361.886
	Minimum	1300	1000
	Maximum	10000	12000

Source: Authors' fieldwork, 2021

4.

3.4 Comparison of Level of Profit between Owners and Non-owners operated Para-transit

A two-tailed test was also performed to test whether owner-operated tricycle make more money per day than non-owners. The Mann-Whitney U-Test showed that there is a difference (U=281.00, p < 0.0001). Similarly, a test of difference in profitability performed between owner and non-owner operated motorcycle showed that there is a difference (*U = 342.50, p < 0.0001*).

4.3.5 Maintenance

The tricycle operators spent higher on vehicle maintenance (*Mdn* = 5,000) than the Motorcycle operators (*Mdn* = 4,000) and Mann-Whitney U-Test showed that this difference was statistically significant (U=3,064, p=.011, r= 0.19) as presented in Table 8.

Table 8. Maintenance Cost of Para-transits Modes

Variable		Maintenance Cost(Naira)	
		Tricycle	Motorcycle
Monthly cost of maintenance	Frequency	96	84
	Mean	6,094.27	4,302.44
	Median	5,000	4,000
	Modal	3,000	3,000
	Std. Deviation	3,998	2,375.44
	Minimum	500	500
	Maximum	15,000	15,000

Source: Authors' analysis of data 2022

4.

3.6 Side Mirrors

A Chi^2 test was performed between Mode of commercial transport and availability of side mirrors data in Table 9. A strong statistically significant relationship was established (χ^2 (2) = 71.35, p = <.001, Cramer's V = 0.63), hence it can be concluded that tricycles are better maintained in terms of availability of side mirrors. Additionally, a Chi^2 test was performed between Mode of commercial transport and availability of trafficators. The result showed that there is a statistically significant relationship (*χ^2 (2) = 9.96, p = .007, Cramér's V = 0.24*).

Table 9. Side Mirror and Availability of Trafficators in Para-transits Mode

Variable		Tricycle		Motorcycle		Total
		n	%	n	%	n
Have side mirrors?	Yes, the two intact	86	89.58	28	33.33	114
	Yes, only one	8	8.33	8	9.52	16
	No	2	2.08	48	57.14	50
Total	96	100	84	100	180	Total
Does your vehicle have trafficators?	Yes, the two intact	87	90.63	64	76.19	151
	Yes, only one	7	7.29	8	9.52	15
	No	2	2.08	12	14.29	14
Total		96	100	84	100	180

Source: Authors' fieldwork, 2021

4.3.7 Safety Perception of Operators

More of the motorcycle operators (13.89%) perceived their mode (Fig.1) as not safe compared to 0.56% of the tricycle operators and the difference in their perception was found to be statistically significant (χ^2 (2) = 52.59, p = <.001, Cramér's V = 0.54) as shown in Table 10. There is also a difference in safety perception between the owner and non-owner operators of tricycle (*χ^2 (2) = 8.5, p = .014, Cramér's V = 0.54*) but not with motorcycle (*χ^2 (2) = o.24, p = <.888, Cramér's V = 0.54*).

Figure 1. Paratransit Modes in Minna.

Table 10. Perception of Para-transits Modes Safety

Variable		Very safe		Fairly safe		Not as safe		Total	
		n	%	n	%	n	%	n	%
Safety perception	Tricycle	49	27.22	46	25.56	1	0.56	96	53.33
	Motorcycle	7	3.89	53	29.44	24	13.33	84	46.67
	Total	56	31.11	99	55	25	13.89	180	100

Source: Authors' fieldwork, 2021

4.3.8 Accident Experience by Mode

About 45% of the motorcycle operators had experienced accident, 34.38% of tricycle operators reported not to have been involved in accident as shown in Fig. 2. A Chi^2 test performed showed that there is a weak but statistically significant difference in the accident experience (χ^2 *(1) = 7.56, p = .006, Cramér's V = 0.2*).

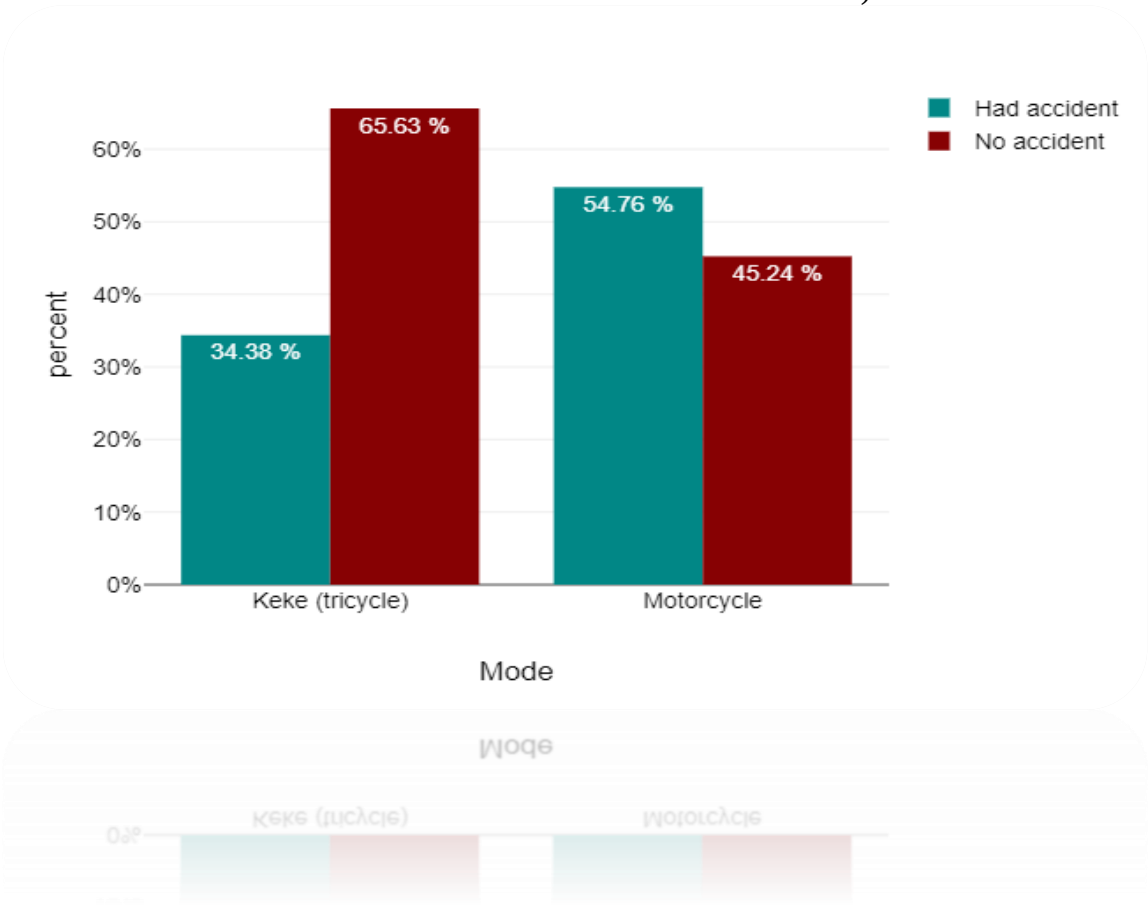

Figure 2. Accident by Paratransit Modes

4.3.

9 Disaggregated Mode Ownership and Accident Experience

Even though a far higher percentage of tricycle non-owners (72.22%) had not been involved in accidents compared to owners (56.1%) as depicted in Table 11, this observation is not statistically significant (χ^2 (1) = 2.67, p = .102, Cramér's V = 0.17). So also, in the case of motorcycle operation, even though more "the owner" (58.18%) had accident experience compared to 48.28% of the non-owners, this observation is not statistically significant (χ^2 (1) = 0.75, p = .386, Cramér's V = 0.09).

Table 11. Accident experience by Specific Mode Ownership

Ownership	Ownership	Road Experienced Accident	%	No Accident	%	Total	%
Tricycle	Non Owner	15	27.78 %	39	72.22 %	54	100 %
	Owner	18	43.90 %	23	56.10 %	41	100 %
	Total	33	34.74 %	62	65.26 %	95	100%
Motorcycle	Owner	23	41.82 %	32	58.18 %	55	100 %
	Non Owner	15	51.72 %	14	48.28 %	29	100 %
	Total	38	45.24 %	46	54.76 %	84	100 %

Source: Authors' fieldwork, 2021

5.0 Discussion of findings

More of the motorcycle operators (65.48%) than tricycle operators (43.16%) owned their means of commercial transport mode. This is explained by the fact the mean cost of tricycle is about thrice of that of motorcycle, thus more of the tricycle operators acquired their tricycle through hire-purchasing method. Also, mean daily income of both motorcycle and tricycle operators of about N3,000 confirms the findings of earlier works of Adebayo *et al*. (2016) and Ajala *et al*. (2020) that majority of the operators earned below N4,000 per day. Even though the tricycle operators seem to make higher income (Mdn = N3,000) than the motorcycle operators (Mdn = N2,500) the difference was not statistically significance. The daily income is affected by the rising fuel cost and multiple levies paid by the para-transit operators. However, statistically significant differences were found in daily income when ownership is factored into the analysis. The owners make more daily income when they operate their motorcycles or tricycles by themselves. Even though non-owners are believed to work longer, engage in overloading and operate outside the approved routes (embarking on longer journeys) to break even, their profit is eroded by the fact that they have daily returns to deliver to the owner, they are targeted by touts and law enforcement agents who easily identify them by their dressing and looks. This is confirmed by the study by Adebayo *et al*, (2016) who concluded that only 35.4% of the operators had valid license and extortion from traffic agents (38.6%) was the most important challenge faced by the tricycles.

In terms of maintenance, tricycles were found to be more maintained than the motorcycles by their operators with about 90% of the tricycle operators having both their side mirrors and trafficators all intact compared to about 33% and 76% respectively for the motorcycle operators. Also, the tricycle operators had more sense of safety with their mode with about 51% of them feeling very safe than the motorcycle operators (8.33%). Lower percentage of tricycle operators (34.38%) compared to motorcycle operators (45.24%) reported to have been involved in an accident and this correlates with the fact that the navigational aids (side mirrors and trafficators) of

tricycles were more in place than those of the motorcycles as shown in this study.
More of the owner's tricycle operators (43.90%) were found to have experienced automobile accident than the non-owner operators (27.78%) unlike the case with the motorcycle mode where non-owner record higher accident experience (51.72 %) compared to the owner operators (41.82 %) however, the differences in both cases were not found to be statistically significant. Thus, ownership of these mode of commercial transport does not insulate the operators from automobile accidents as their riding behaviour while pursuing economic gains is not different.

Conclusion

In this study, it has been established that tricycle is costlier to own but as a means of commercial transport yields more daily income than motorcycle. Also, that paratransit operated by the owner are better maintained and yield more daily income than those operated by non-owners. However, while tricycle is considered safer and less involved in accidents, ownership does not guarantee immunity from accidents. There is the need for further studies to find out if difference in driving behaviour of the commercial and private operators exist and how this difference (if any) impact on automobile accident rates.

Findings in this study revealed that paratransit by tricycle and motorbike provides means of living and types of work in the transportation industry amidst pervasive structural unemployment. As a result, the government must establish a regulation for paratransit operation in the city to function as a feeder system for mass transit. As such, the government should develop a pathway for soft lending schemes to encourage potential operators to purchase tricycles. Government investment in commercial tricycle operation would not only reduce unemployment and raise income, but will also avoid the negative repercussions of idleness among unemployed youngsters and encourage insecurity.

Also, commercial motorcycle operators need to be cautious and sensitized periodically by the Federal Road Safety Corp(FRSC) on the essence of adhering to safety measures while operating, as this will help reduce the rate of accidents experienced by their operators. Local Government officials should not only be concern with the daily collection of revenues (Loading/ Garage fee). Still, they should also assist the FRSC and the Vehicle inspection officers (VIO) in checking the condition and maintenance of both paratransit modes in terms of roadworthiness. This will also ensure the safety of both the operators and the users of the paratransit modes.

Furthermore, there is a need to improve inner city road network to attract tricycle operators so as to reduce the gap created by the ban on or limitation of operating hours imposed on motorcycles for transportation in the provision of door-to- door service in the absence of functional urban mass transit programme.

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