Iranian Journal of Economic Studies, 8(1) 2019, 107-118

Shiraz University

Iranian Journal of Economic Studies

Journal homepage: ijes.shirazu.ac.ir

The Determinants of the Mode of Informal Transport Chosen in North Central City of Ilorin, Nigeria

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Article History

Received date: 12 November 2018
Revised date:17 January 2019
Accepted date: 17 April 2019
Available online: 25 June 2019

JEL Classification:
C83
L91
O17

Keywords:
Informal Transport
Choice
Nigeria
Multinomial logit model

Abstract

Transportation is a necessity if the day-to-day economic activities of the society must move on. There are different modes of informal transport available in Nigeria. This study evaluated the determinants of the modal choice of informal transport among commuters in North central city of Ilorin, Nigeria. The study used primary data generated through a structured questionnaire administered to 100 commuters randomly selected in Ilorin metropolis. The study used a multinomial logit model for data analysis. The results showed that earnings and household size were the core determinants of the choice of informal transport mode. The study concluded that different informal transport modes available to the commuters gave them the opportunity to make choices based on their income and the transport cost in Ilorin metropolis, Nigeria.

1. Introduction

The movement of persons, goods, and services from a particular geographical location to the other is imperative for the smooth running of the day-to-day economic activities in our society. This is borne out of the fact that no nation can escape transport if such a nation must grow (Aditjandra et al., 2016). There are various modes of informal transport ranging from Class I; Class II; Class III; Class IV to Class V. The Class I category of informal transport consists of vehicles that can carry between 25-60 passengers. Therefore, wooden or locally built metal bodied trucks found in Lagos, Nigeria, should be included in this class. These vehicles are often called Molue, Bolekaja, and Ongoro, as the case may be. Minibuses that carry between 12-24 passengers are in the Class II category. This includes 12-14-seater buses that are found in many motor parks in Nigeria and they offer both intra- and inter-city

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DOI: 10.22099/ijes.2019.31386.1506

transit services. The Class III category of informal transport includes micro-vehicles like taxicab, station wagons, or any other vehicle that has a seating capacity of about four to eleven passengers. Sometimes, vehicles in this class do offer door delivery service at a higher fare.

The Class IV category of informal transport is often regarded as the smallest mode of informal transport. This includes tricycles and motorcycles that can carry between 2-4 passengers. The non-motorized animal or human-powered mode of transportation forms the Class V category of informal transport. For example, in the northern part of Nigeria, camels, donkeys, and horses are used as modes of transportation. Specifically, these animals are used to transport people and agricultural products from farms to areas where they are needed.

Commuters are faced with alternative modes of informal transport and their choice is made with regard to the peculiarity of each mode and the desire of the commuters. Travelers' mode choice depends on their socio-economic backgrounds and their perception of the modes (Mintesnot & Shinei, 2007). Several studies such as those done by Ogunsanya and Galtima (1993), Ayeni (1995), Ojekunle (1998), Adeyemo (1998), Oyesiku (2001), Douglas (2005), Aderamo (2010), Yakubu et al. (2014) , and Yakubu (2015), were focused on both formal and informal transport in Nigeria with little attention to what actually determines the choice of transport mode among commuters. The objective of this paper, as a result, was to evaluate the determinants of the choice of transport mode among commuters in Ilorin, Nigeria. The paper is divided into five sections. Following the introductory part, section two is devoted to a review of the literature; section three presents the methodology and in section four, the results are discussed. The last section offers some conclusion and recommendations.

2. Literature Review

Scheiner and Holz-Rau (2007) carried out a theoretical study to explore the link between life statuses, style of living, preferred residential location, and travel attitude and he employed the models of structural equations to come up with some empirical findings. The analyses of the results were established on data from a survey collected from seven locations in the Cologne region. The results showed that lifestyles influenced the choice of transportation mode, but the effect was insignificant even when there was some control on the status of life. The influence which the status of life exerted on the choice of the mode of transportation surpassed that of the lifestyle. The influence which the style of living and life status exerted on the choice of mode was mainly mediated by an individual's attitude towards particular locations. Both objective spatial conditions and subjective location attitudes were important. They concluded that the choices made about the mode of travel were influenced by either objective or subjective determinants. This finding is also supported by a study conducted by Kamargianni et al. (2015).

In their study, Chee and Fernandez (2013) examined the factors that affected Penang commuters' choice of the mode of transport: The study highlighted the importance of revamping the transport policies in the light of the basic factors that were found to have had an impact on the mode choice behavior. They used primary data and the data for the survey was collected using a questionnaire structured and distributed to Penang residents in August and September 2012. The survey used English and Bahasa Malaysia, which was the local language. Convenience sampling method was adopted to select samples, each including 398 respondents. The findings showed that there was a strong preference for the utilization of motorcycle or car in Penang. The use of a private vehicle was seen as the preferred choice by respondents with diverse characteristics. Above 60% of the sample in all the examined age groups were users of private vehicles, except for those who were above 55 years. When gender was considered, females seemed to be relatively less willing to use public transport. Having a driving license and regular access to a private vehicle were both significant in affecting the mode choice behavior of the participants.

In an attempt to help lowering short distance journeys by cars, Li et al. (2015) analyzed the factors influencing the mode choice of short distance travelers. The research was carried out at two typical kinds of residential areas, one with a low level of distance car trips and the other with a high level of distance car trips. After structural equation modeling was applied, the results showed that the household income, age, and car ownership had a significant impact on the mode choice for short distance journeys. Moreover, when the residents with the same features (similar household income, age group, and vehicle ownership) in the study areas were compared, those with the greenest travel mode environment in their area made up the larger part of those who picked the green mode. From this result, it is evident that having a better green-mode travel environment results in a higher use of green-mode travels. Finally, the paper revealed the residents' openness to switch travel modes from cars to those categorized under the green mode.

Kamargianni et al. (2015) analyzed children's travel mode choice for going to school by applying new probit-kernel based Integrated Choice and Latent Variable (ICLV) model. Looking at mode choice behavior of teenagers, their study showed that transport network characteristics, such as having a separate path for bicycle, parking areas for bicycle, and the width of sidewalks, significantly influenced the selection of active transport. In the mode choice model, the latent variables were very significant. Safety consciousness had positive effects on the choice of the car mode (with an adult escort), just as expected. Bus was chosen and favored by those following a green lifestyle while there was a rise in the probability of selecting active transport as a result of the propensity of Physical activity (bicycle and walk). For empirical analysis, the study used data that originated from a survey carried out in Cyprus in 2012. The value of adding subjective attitudinal variables in the modeling on the school

mode choice was highlighted by the results. The study also put emphasis on the importance of making improvement in the safety of walking and bus and transmitting the improvements made to the general public, most importantly to females and households with relatively high income. With regard to the value of investing in walking and bicycling infrastructure, the study provided little relevant details.

In their study, Aditjandra et al. (2016) examined the link between the use of land and travel behavior using available data on Tyne and Wear, North East England. The aim had been to gain a better understanding of the mechanism by which travel behavior differences could be explained when households moved from one neighborhood to another. Studies from Northern California revealed that when attitudes and changes in the socio-demographic features were controlled, changes in the use of automobile were influenced by changes in the accessibility and spaciousness of features of built environment whereas changes in the walking trips were linked to changes in the physical activity options, safety, attractiveness, and social aspects. The North East England data revealed that changes in the driving behavior were influenced by changes in the accessibility to shopping, safety conditions, and social factors (Aditjandra et al., 2012). Adopting quasi-longitudinal household survey data from ten neighborhoods selected from North East England in spring, 2007, this study focused on the analysis of walking and changes in the use of public transport after residential relocation. The study posited that changes in the use of public transport were determined by attitudes toward travel, the accessibility of the built environment features, and socio-demographic factors.

3. Methodology

This study employed a Multinomial Logit Model (MLM) that gave the probability of each alternative open to the decision makers (commuters) (see: Maddala, 1983; Williams, 2008 and Yakubu et al., 2014).

The common expression for the probability of choosing an alternative '*i*' (*i= 1,2,……..j*) from a set of *J* alternatives is;

$$Pr(i)= \frac{exp(V_i)}{\sum_{j=1}^{j} exp(V_j)} \quad (1)$$

Where *Pr(i)* is the probability of the decision maker choosing alternative *i* and V_j is the systematic component of the utility of alternative *j*.

Decision makers had three alternatives: Taxicab (*TC*), Commercial motorcycle (*CM*), and Tricycle (*TR*).

The probabilities of each alternative were measured by modifying equation (1) for each alternative;

$$Pr(TC) = \frac{exp(V_{TC})}{exp(V_{TC})+exp(V_{CM})+exp(V_{TR})} \quad (2)$$

$$Pr(CM) = \frac{exp(V_{CM})}{exp(V_{CM})+exp(V_{TC})+exp(V_{TR})} \quad (3)$$

$$Pr(TR) = \frac{exp(V_{TR})}{exp(V_{TR})+exp(V_{TC})+exp(V_{CM})} \quad (4)$$

Where *Pr(TC)*, *Pr(CM)*, and *Pr(TR)* are the probabilities of the decision-maker choosing taxicab, commercial motorcycle, and tricycle, respectively. V_{TC}, V_{CM}, and V_{TR} are the systematic components of utility for a taxicab, commercial motorcycle, and tricycle, respectively. Equations 2, 3, and 4 can be summarized as follows:

$$Pr(i)= \frac{exp(V_i)}{exp(V_{TC})+exp(V_{CM})+exp(V_{TR})} \quad (5)$$

Compressing equation (5) results in the following;

$$Pr(i)= \frac{exp(V_i)}{\sum exp(V_j)} \quad , \quad J=TC, CM, TR \quad (6)$$

Where *i* connotes the alternative for which the probability is being computed. The implication of this formulation was that the probability of selecting an alternative rose monotonically with a rise in the systematic utility of that alternative and reduced with a decrease in the systematic utility of each of the other alternatives.

3.1 Data Sources

Primary data were used for this study. This was generated through a structured questionnaire administered to 100 commuters selected randomly in the study area using convenient sampling technique. The variables were measured both in nominal and categorical forms. The data were analyzed using STATA 12.0 statistical package.

Table 1. Variables and their measurement

Categorical variables	Measurement
Gender	Female= 0, Male = 1
Marital status	Single = 0, Ever married=1
Dependents	Yes=1, Otherwise= 0
Mode of informal transport	Taxicab = 1, Commercial motorcycle = 2, Tricycle = 3, Others = 4
Educational attainment	No formal schooling = 0 Primary education (incomplete =1, completed = 2) Junior education (incomplete = 3, completed = 4) Senior education (incomplete = 5, completed= 6) Tertiary education (incomplete=7, completed = 8) Others = 9
Nominal variables	
Age	In completed years
Number of trips per week	Number
Expenditure on transport per month	Naira
Time spent to get informal transport	Minutes
Travel time	Minutes
Household size	Number

***Source**: Compiled by the authors, 2016.*

3.2 Study Area

Ilorin is the capital city of Kwara state which is located in the north-central region of Nigeria. It occupies 35,705 square kilometers and is situated along the Lagos-Kaduna highway, 306 km from Lagos, 600 kilometers from Kaduna, and about 500 kilometers from Abuja (Akogun & Ojo, 2013). It is also the last emirate to the south of Northern Nigeria where in the wake of the success of the 19th Century Jihad led by Shehu Uthman Dan fodio, it evolved as an emirate political system and presently stands as one of the major parts of Northern Nigeria. Being among the frontier dominated by the Southwestern Nigerian Yoruba culture, its ability to sustain the emirate political structure consolidates its historical relations with the northern Nigeria that is dominated by Hausa/Fulani groups (Danmole, 1980). The 2006 population census figure showed that there were 2,371,089 people in Kwara State with a growth rate of 6.2% (NBS, 2006 and Odeniyi, 2007). Of this number, 1,543,301, representing 42.72% of the state total population, live in Ilorin. The state capital has undergone a very high rate of population growth over the course of time. Located on latitude 8^0 3'N and longitude 4^0 35'E, the metropolis is made up of three local government areas, namely Ilorin West, Ilorin South, and Ilorin East (Ahmed, 2009).

4. Empirical Results

Table 2 shows cross-tabulation of the choice of transport to the workplace, gender, marital status, education attainment, occupation, and minutes spent to get one mode of transportation. The result showed that 42.59%, 42.59%, and 1.85% of the male respondents preferred to go to their workplace by taxicab, commercial motorcycle, and tricycle, respectively, leaving 12.96% who preferred other modes of transport except those mentioned above. On the other hand, for female respondents, 54.76%, 30.95%, and 9.52 preferred to go to their workplace by taxicab, commercial motorcycle, and tricycle, respectively, leaving 4.76% who preferred other modes of transport. This indicates that majority of the male population preferred taxicab and commercial motorcycle over other modes of transport. Almost similarly, more than half of the female respondents preferred taxicab. The results also showed that the same was true for both married and single respondents. The Majority favored going to work by taxicab, making commercial motorcycle their second preferred option. As regards occupation, it was observed that the majority of people who were unemployed, those who worked for the government, those who worked in the private sector, and those retired preferred taxicab, followed by commercial motorcycle. The only exception was informal sector workers of whom the majority preferred going to work by commercial motorcycle.

Table 2. Cross-Tabulations

Variables	Choice of Transport to the workplace				
	Measurement	Taxicab (%)	Comm. Motorcycle (%)	Tricycle (%)	Others (%)
Gender	Male	42.59	42.59	1.85	12.96
	Female	54.76	30.95	9.52	4.76
Marital status	Single	55	30	5	10
	Married	44.44	40.74	5.56	9.26
Occupation	Unemployed	66.67	26.67	-	6.67
	Government work	42.86	35.71	-	21.43
	Retrenched/retired	66.67	33.33	-	-
	Informal sector worker	28.13	53.13	12.5	6.25
	Private Sector	53.33	33.33	-	13.33

Table 3 shows that the average age of the sampled individuals was about 33 years, with a minimum of 14 years and a maximum of 67 years. The spread of age of the participants from the average was about 12 years. The average household size of the sample was about 5 individuals, with the smallest and largest sizes of 1 and 30, respectively. The spread from the average household size was about 3. The average number of dependents outside the immediate family per individual in the sample was about 3, with a maximum of 13 and a standard deviation of more than 2 dependents. However, some individuals in the sample had no dependents outside their immediate family. The average monthly earning of the sample was about 23,161.89 Naira, with the lowest and highest earning being 80 Naira and 115,000 Naira, respectively. The spread of monthly earning from the average in the sample was about 21,254 Naira. The average number of trips taken per week by the participants was above 11 trips, with 70 being the highest number of trips taken and a standard deviation of about 8. However, the least trip taken by an individual in the sample was 0. On average, the participants had to spend 23.3 minutes to reach their destination with a sample spread of about seven minutes. The least time spent to arrive at a destination was one minute while the highest time spent was 90 minutes. The average minutes spent waiting for a mode of transport was about three minutes, with a spread of about two minutes and a minimum and maximum waiting period of one and five minutes, respectively. Average monthly expenditure on transportation was 4,842.42 Naira, with the lowest and highest being 300 Naira and 34,000 Naira, respectively.

Table 3. Summary Statistics

Variables	Mean	Std. Dev.	Maximum	Minimum
Age	32.66	12.48	67	14
Household Size	5.43	3.57	30	1
Number of Dependents	2.92	2.54	13	0
Earnings	23,161.89	21,254.04	115000	80
Trips per week	10.51	7.98	70	0
Minutes to Destination	23.3	7.01	1	90
Minutes to get Transport	3.34	1.57	1	5
Expenditure on Transport	4842.42	5382.19	34000	300

Tables 4 and 5 present the respective logit regression and marginal effect after logit results of three models, i.e. taxicab, commercial motorcycle, and tricycle models. Each of the modes of transport was regressed on the socio-economic characteristics of individuals. Each of these models was estimated with robust estimates of standard errors in order to correct the likely presence of heteroskedasticity. The result of taxicab model indicated that household size positively affected the probability of demand for taxicab (by about 0.167 as the marginal effect) while minutes spent to get a mode of transport and logarithm transport spending negatively affected the probability of demand for taxicab by about 0.172 and 0.379, respectively, evident from the marginal effect after logit. These findings imply that, on one hand, the probability of demand for taxicab increased with larger household size, and, on the other hand, the probability of demand for taxicab decreased with more minutes spent to get transport and transport spending. Nevertheless, the effects of earnings, educational attainment, and minutes spent to reach a destination did not affect the probability of demand for taxicabs. Household size had a significant effect on the probability of demand for taxicabs at 1% level of significance. Transport spending and minutes spent to get a mode of transport affected the probability of demand for taxicabs at 5% and 10% levels of significance, respectively. Chi-squared value of 11.13, reported in the logit regression table, indicated that the overall model was significant at 10%, and the pseudo R-squared indicated that the model moderately fitted 34.28% of the probability of demand for the taxicabs explained by the socio-economic factors. The predicted probability of demand for the taxicabs, as reported in the marginal effect after the logit table, indicated that the socio-economic factors could predict about 0.59% of the probability of the demand for the taxicabs.

The results of the commercial motorcycle model indicated that minutes spent to get a mode of transport and the logarithm of transport spending had positive effects on the probability of the demand for commercial motorcycles, by about 0.156 and 0.297 marginal effect, respectively, while household size affected the probability of the demand for commercial motorcycle negatively, by about 0.137 marginal effect. These findings imply that the probability of the demand for commercial motorcycles increased with more minutes spent to get a mode of transport and higher transport spending whereas the probability of

demand for the commercial motorcycles decreased with larger household sizes. However, the effects of earnings, educational attainment, and minutes spent to reach a destination on the probability of demand for commercial motorcycles were insignificant. Chi-squared value of 12.66, reported in the logit regression table, indicated that the overall model was significant at 5%, and the pseudo R-squared indicated that the model moderately fitted 29.91% of the probability of the demand for the commercial motorcycles explained by the socio-economic factors. The predicted probability of the demand for the commercial motorcycles, as reported in the marginal effect after the logit table, indicated that the socio-economic factors could predict about 0.26% of the probability of the demand for commercial motorcycles.

The results pertinent to the tricycle model indicated that the logarithm of earnings had a positive effect on the probability of the demand for tricycles while educational attainment and transport spending had negative effects on the probability of the demand for this mode of transport. The effects of household size, minutes spent to reach a destination, and minutes spent to get a mode of transport were not significant. These findings imply that the probability of the demand for tricycles significantly increased with higher earnings but decreased with higher educational attainment and transport spending. Chi-squared value of 17.04 indicated that the overall model was significant at all conventional levels of significance. Also, the pseudo R-squared indicated that the model moderately fitted 15.62% of the probability of the demand for tricycles explained by the socio-economic factors.

Table 4. The results of Logit Regression Models

Variables	(1) Taxicab	(2) Motorcycle	(3) Tricycle
Household size	0.693***	-0.717***	-0.0588
	(0.230)	(0.222)	(0.0456)
Log earnings	-0.613	0.193	1.981***
	(0.376)	(0.262)	(0.535)
Educational attainment	-0.0402	-0.0864	-0.333**
	(0.165)	(0.165)	(0.149)
Minutes spent to destination	-0.0227	0.0136	-0.00907
	(0.0211)	(0.0220)	(0.0158)
Minutes spent to get transport	-0.712*	0.829*	-0.221
	(0.405)	(0.487)	(0.222)
Log transport spending	-1.573**	1.551*	-1.758***
	(0.698)	(0.816)	(0.568)
Constant	18.77**	-14.59*	-5.829
	(7.642)	(8.499)	(5.075)
Observations	39	39	39
Chi-squared	11.13*	12.66**	17.04***
Pseudo R-squared	0.343	0.299	0.156

***Notes**: (i) Robust standard errors in parentheses;*
*(ii.) *** p<0.01, ** p<0.05, * p<0.1*

Table 5. Marginal effect after derived from the Logit model
Pr(Taxi Cab) = 0.5522192, Pr(Motorcycle) = 0.3233818, Pr(Tricycle) = 0.01399103

Variables	(1) Taxicab	(2) Motorcycle	(3) Tricycle
Household size	0.167***	-0.137***	-0.0004
	(0.052)	(0.038)	(0.0005)
Logarithm of Earnings	-0.148*	0.037	0.014
	(0.089)	(0.051)	(0.013)
Educational attainment	-0.010	-0.017	-0.002
	(0.040)	(0.032)	(0.002)
Minutes spent to destination	-0.005	0.003	-0.0001
	(0.005)	(0.004)	(0.0001)
Minutes spent to get transport	-0.172*	0.159*	-0.001
	(0.099)	(0.086)	(0.002)
Logarithm of transport spending	-0.379**	0.297**	-0.012
	(0.168)	(0.149)	(0.012)

***Notes**: (i.) Robust standard errors in parentheses;*
*(ii.) *** p<0.01, ** p<0.05, * p<0.1*

5. Conclusion and Recommendations

The study concludes that factors such as transport cost, earnings, household size, time spent to get a mode of transport, time spent to get to a destination, and educational attainment affect the choice of transport mode among the commuters selected for this study. Given the necessity of transport in the daily lives of people, the study recommends that the government assist the commuters by providing an enabling environment for the transit service providers so that they can operate freely and make their services affordable to the commuters. One of the limitations of the study was that the process of data collection was time-consuming given the nature of the research.

References

Aderamo, A. J., (2010). Transport in Nigeria: The case of Kwara State. *AfricanEconomic and Business Review*,*8*(1), 19-40.

Adeyemo, M. A., (1998). An appraisal of motorcycle as a commercial passenger transport mode in Port Harcourt metropolis. *Journal of Transport Studies*, *2*(1), 77-89.

Aditjandra, P. T., Cao, X. and Mulley. C., (2012). Understanding neighborhood design impact on travel behavior: An application of structural equations model to a British metropolitan data. *Transportation Research Part A: Policy and Practice* 46(1): 22–32. doi:10.1016/j.tra.2011.09.001.

Aditjandra, P. T., Cao, X. and Mulley. C., (2016). Exploring changes in public transport use and walking following residential relocation: A British case study.

Ahmed, Y. A., (2009). Settlements pattern and functional distribution in an emerging community: A case study of a local government area of kwara state, Nigeria. *Medwell J. the Social Sciences 4*(3): 256-263.

Akogun, I. T., and Ojo, O., (2013). Tenant eviction in property management practice in ilorin metropolis, Nigeria. *Journal of Economics and international finance*, *5*(4), 139-145.

Arosanyin, G.T., and Yakubu, A. T., (2014). Driver License Compliance Among Commercial Motorcyclists in Kwara State, Nigeria: *In Road Logistics in Support of Development: Selected Papers from the 5th Regional Conference for Africa of the South African Road Federation/ International* Road *Federation* held in Pretoria South Africa between 2-4 September 2014, ISBN 978-0-620-61999-8; Chapter 5, Folder 7, File no. 3. Published by SARF/IRF. Available at www.sarf.org.za/uploads/.

Chee, W. L., and Fernandez, J. L., (2013). Factors that Influence the Choice of Mode of Transport in Penang: A Preliminary Analysis. Procedia - Social and Behavioral Sciences 91 (2013) 120 – 127.

Danmole, H. O., (1980). The Frontier Emirate: A History of Islam in Ilorin. An unpublishedPh.D Thesis.

Handy, S., Cao, X., and Mokhtarian. P., (2005). Correlation or causality between the built environment and travel behavior? Evidence from Northern California. *Transportation Research PartD:Transport and Environment* 10(6): 427–444. doi:10.1016/j.trd.2005.05.002.

Kamargianni, M., Dubey, S., Polydoropoulou, A., and Bhat C., (2015). Investigating the Subjective and Objective Factors Influencing Teenagers' School TravelModeChoice – An Integrated Choice and Latent Variable Model. m.kamargianni@ucl.ac.uk

Li, M., Song, G., Cheng, Y., and Yu, L., (2015). Identification of Prior Factors Influencing the Mode Choice of Short Distance Travel. *Discrete Dynamics in Nature and Society*, Volume 2015, Article ID 795176, http://dx.doi.org/10.1155/2015/795176.

Maddala, G. S., (1983). *Limited-dependent and qualitative variables in econometrics*.Cambridge: Cambridge University Press.

National Bureau of Statistics (NBS), (2006). *Federal Republic of Nigeria, 2006 Population Census*. Retrieved August 1, 2009, from http://www.nigerianstat.gov.ng/Connections/Pop2006.pdf.

Ogunsanya, A., and Galtima, M., (1993). Motorcycle in public passenger transport service in Nigeria: A case study of Yola town, urban passenger transportation in Nigeria., Lagos: Heinemann Books.

Ojekunle, J. A., (1998). Operations and use of motorcycles as a mode public passenger transport. In Dange, H., Chikolo, I.V., and Ogunsanya, A. A. (eds). Issues in transport planning and management (pp.84-103). Zaria. NITT.

Oyesiku, K. O., (2001). City poverty and emerging mobility crisis: The use of motorcycle as public transport in Nigerian cities. The proceedings of the 9thworld conference of transport research, held in Seoul, Japan, 22-27 July, 2001. 65-70.

Scheiner, J., and Holz-Rau. C., (2007). Travel mode choice: Affected by objective or subjective determinants? *Transportation* 34(4): 487–511. doi:10.1007/s11116-007-9112-1.

Williams, H. G., (2008). Econometric analysis. Pearson publications USA. Sixth edition

Yakubu, A. T., (2015). Policy Issues Relating to Informal Transport in Developing World:*In Policy Issues and Development*;pp 173-189. H.M. Bandara (ed.). Published by Stanford Lake (Pvt) Ltd Pannipitiya Sri Lanka.