

Determinants of Earnings among Commercial Motorcycle Operators in Kwara State, Nigeria

Yakubu, Ahmed Taruwere.ⁱ

ⁱ Department of Economic, University of Ilorin, Ilorin Nigeria, P.M.B 1515
E-mail: taruwere@yahoo.com

ABSTRACT

The informal transport business in Nigeria most especially the commercial motorcycle transport popularly called okada; serves as a means of livelihood to many people in the country. This paper evaluated the core determinants of earnings among commercial motorcyclists across the rural-urban divide in Kwara State, Nigeria. Apart from the specific objective, other issues examined include background of the respondents; economic and operational characteristics of the okada operators. A total of 80 Questionnaires were distributed to okada operators in both rural and urban areas. Out of this 77 were returned valid. The paper used a modified Mincerian equation as tool for data analysis. Results from the study show that, the significant variables like age of okada riders; location; and license holding positively determine earnings while variables such as age²; and average fare charged per trip; negatively determine earnings . The findings further indicate that okada riders earn a minimum of N 500 and maximum of N 2,800 per day. Urban okada operators earn N 591.97 higher than the rural operators; licensed operators also earn N 512.37 higher than non licensed operators daily. In this connection, education does not in any way determine earnings of commercial motorcyclists. This runs counter to the expectation of Human Capital Theory.

1. INTRODUCTION

The relative short fall of the conventional public transport in many countries led to the consideration of a novel innovative mode of operation now known as unconventional or informal transport as the case may be (Cevero,2000; Aworemi, et.al 2008). This has been the case in places where public transport supply is insufficient to meet the travel needs of the population. In Nigeria, the private sector is involved in the business of procuring different types of vehicles that are believed to be cost effective in meeting peoples demand for mobility. Commercial motorcycle transport popularly known as *okada; achaba; going; express* etc have become a source of livelihood for the poor. Operators of this informal mode of transport take it as last resort to generate income for their families and dependants to survive (Arosanyin, et. al 2011). Informal public transport modes vary in size, type and operation from place to place all over the world. In Madras, Caracas and Delhi; Duto and Pedicab, bicycle, rickshaw, Lorries and hand cast are informal transport modes used for goods and passenger movements. In the U.S.A. for example, the informal transport modes are in the forms of *Jitney, dial and ride subscription buses, Vanpool, shared taxi and auto rapid transit* (Ane, et. al, 2011).

Previous studies in the operation of commercial motorcycle in Nigeria, such as Adeniji 1983; Ogunsanya and Galtima, 1993; Adesanya, 1996; Adeyemo, 1998; Ojekunle; 1998; and Ogunrinola, 2011, do not thoroughly examine the core determinants of earnings among commercial motorcycle operators. However, Arosanyin, 2010 attempted to bridge this gap by examining the determinants of earnings among commercial motorcyclist in Ilorin using an adapted Mincerian equation. Results from the study reveal that those variables such as patronage index; mode of operation; experience; ownership status and number plates were significant determinants of earnings in this informal transport mode. This study suffers from limited data base because it is urban focused.

The objective of this paper is to evaluate the core determinants of earnings among commercial motorcyclists across the rural-urban divide. Following the introductory part; section 2 is the theoretical framework; section 3 is the methodology; discussion of results is presented in section 4 while section 5 contains the conclusion.

2. THEORETICAL FRAMEWORK

The theoretical foundation for this study is the human capital theory (HCT) where Becker (1962) and Mincer (1974) view education and training as the major source of human capital accumulation that, in turn, have direct and positive effect on individual's life time earnings. The human capital theory serves as the theoretical framework for analyzing earnings. Resources such as education, training and experience can increase a worker's productivity and earnings (Berker 1962; Mincer 1974). Berker (1960), further contends that physical capital and labour market experience plays the strongest role in the income generating process for self-employed. A widely used adapted model based on the HCT is the Mincerian earnings function. The Mincerian earnings function is flexible depending on peculiarities of the study environment.

Human capital is the term economist often use for education, health, and other human capacities that can raise productivity when increased. Increase in the level of education is capable of raising human capacity of income generation in the society. Human Capital is described further by Mincer, 1974, to mean productive investments embodied in human persons. These include skills; abilities; ideas; resulting from expenditure on education and on-the-job training. In this connection, to operate in the informal sector some form of skills, abilities, ideas and training are needed in order to enhance productivity that will in turn guarantee employment and earnings. This is reflected in some informal sector activities like Tire repair business; motor/motorcycle mechanic; and hairdressing where one need to undergo apprenticeship training to become self employed. However, the commercial motorcycle business requires skills, ideas; and abilities to operate in order to generate employment and income.

3. MODEL SPECIFICATION

Earnings analysis was carried out in order to determine the pattern as well as influence of several explanatory variables on the earnings of *okada* riders in the study locations (Rural/Urban).The model is based on human capital theory. This theory assumes that resources such as education; training; experience; socio-demographic characteristics; etc can increase worker's productivity and earnings. This is an adopted Mincerian equation because it is flexible as it allows the addition of variables of choice. Therefore, following Mincer (1974); Becker (1975); and Arosanyin et.al (2011); the study postulates that:

$$Y = f(H, X, Z,) \text{-----} 1$$

Stating equation (1) explicitly, we have:

$$Y = \beta_0 + \beta_{1i}H + \beta_{2i}Z + \beta_{3i}X + \varepsilon_i \text{-----} 2$$

Where: Y is the daily earnings of the respondents; H is the vector of human capital which contains the level of formal educational attainment measured as number of years spent in school (Edu) as a variable; Z is a vector of safety issues while X is a vector of personal and entrepreneurial characteristics. For this study, the X variables are age of Okada operators (Ag); age square (Ag²); Ownership type (Ot); Location –rural/urban (Lo) ; House hold size (Hh); Fare charged per trip (Fcpt); Passengers carried per day (Pcd). The vector of safety issues (Z) contains License holding (Lh); Hours worked per day; and Days worked per week (Dwpw) and ε is the error term. In this way equation (2) can be expressed further as ;

$$Y = f(Ag; Ag^2; Ep; Edu; Ot; Lo; Hh; Fcpt; Pcd; Lh; Hwpd; Dwpw) \text{-----} (3) \text{ Equation (3) can be written as:}$$

$$Y_i = \beta_0 + \beta_1 Ag_i + \beta_2 Ag_i^2 + \beta_3 Ep_i + \beta_4 Edu_i + \beta_5 Ot_i + \beta_6 Lo_i + \beta_7 Hh_i + \beta_8 Fcpt_i + \beta_9 Pcd_i + \beta_{10} Lh_i + \beta_{11} Hwpd_i + \beta_{12} Dwpw_i + \varepsilon_i \text{-----} (4)$$

The a priori expectation with respect to equation (4) is:

$$, \beta_1, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_9, \beta_{10}, \beta_{11}, \text{ and } \beta_{12} > 0; \quad \beta_2, \beta_8 < 0$$

3.1 The Data

The Data for the Study was strictly primary. This was generated using a comprehensive and structured questionnaire to source for vital information on commercial motorcycle business from the operators in Kwara State, Nigeria. A total of 80 Questionnaires were administered out of which 77 were returned valid which constitute 96.25 percent of the total respondents. The operators were selected randomly using 1 in every 10 registered cyclists.

4. DISCUSSION OF RESULTS

4.1 Descriptive Statistics

Data from the survey show that all the respondents are males with about 65 percent of them married while the remaining 35 percent are single. Commercial motorcyclists who operate on full-time basis constitute 86 percent of the respondents and that, only 14 percent of the okada riders, are on the business on part-time basis.

Table1: Operational characteristics of commercial motorcycle riders

Variable	mean	std. Dev	min	Max
earnings per day	1627.27	484.67	500	2800
Age	32.61	7.42	19	51
no. of years spent in business	5.21	1.87	1	8
household size	3.64	1.55	0	8
passengers carried per day	28.75	12.42	1	100

Source: field survey, 2012

The statistic presented in table 1 revealed, that commercial motorcyclists earn on the average

₦1, 627.27 per day. That is, the operators earn a minimum of N=500 and maximum of ₦ 2,800 per day. The mean age of *okada* riders was computed at 32 years where operators are within the age bracket of 19 years minimum to 51 years maximum. This conforms with National Road Traffic Regulation requirement which stipulates that a commercial motorcyclist must at least be 18 years old (FRN, 2004). The average number of years spent on the *okada* business stands at 5. The results further show that the average number of passengers carried per day was estimated at 28. The average household size of an *okada* rider was computed at 3.

Table 2: Educational attainment and Earnings

Variable	Mean	std.Dev
no formal schooling	1,700	382.97
primary edu.(incomplete)	1,650	212.13
primary edu.(completed)	1,471	468.03
Junior sec. sch.(incomplete)	2,000	0
Junior sec. sch.(completed)	1,790.91	432.33
senior sec. sch.(incomplete)	1,450	635.09
senior sec. sch.(completed)	1,664	425.13
post sec. sch.(incomplete)	1,577.78	651.49
post sec. sch.(completed)	1,563.64	642.3
Others	1,466.67	305.51

Source: field survey, 2012

The relationship between educational attainment and earnings among commercial motorcycle operators is presented in table 2 above. The mean earnings per day of operators with no formal schooling was estimated at ₦ 1,700. Operators with incomplete primary education earn an average of ₦ 1,650 daily while those who completed primary education earn an average of ₦ 1,471.42 per day. The average daily earnings of operators with Junior secondary education (incomplete); Junior secondary education (completed); Senior secondary education (incomplete); Senior secondary education (completed); Post secondary education (incomplete); Post

secondary education (completed); and others are: ₦ 2000; ₦ 1,790.91; ₦ 1,450; ₦ 1,664; ₦ 1,577.78; ₦ 1,563.64; and ₦ 1,466.67 respectively. Drawing from above, it could be seen that, the daily earnings of operators with incomplete junior Secondary education are higher than those with even completed Post Secondary education. This affirms the finding of Arosanyin, et.al, 2011, that no serious education is required to operate in the informal sector.

Table 3: Other issues and earnings of commercial motorcycle operators

Variable	Mean	std. Dev
Own	1,780.00	563.32
Rented	1,604	472.4
Rural	1,273.68	659.83
Urban	1,743.10	346.97
have license	1,718.33	431.98
do not have license	1,305.88	535.57

Source: field Survey, 2012

Table 3 above depicts that commercial motorcycle owner operators earn on the average ₦ 1,780 daily which is higher than ₦ 1,604 daily earnings of operators who rented motorcycle for a daily fee of ₦ 500. Cyclists in the urban areas earn ₦ 1,743.10 per day while operators in the rural setting earn ₦ 1,273.68. In this way, okada operators in the urban areas earn at least ₦ 469.42 higher than their rural counterparts daily. This may not be unconnected with economic activities in the cities. The results reveal further that licensed operators earn higher than operators who are not licensed. Specifically, operators with a driver license earn an average of ₦ 1,718.33 as against ₦ 1,302 daily earnings of operators without driver license.

4.2 Regression Results on Earnings

Table4a : Stepwise Regression Results on Earnings; Dependent variable(Ea) (robust)

Variab le	model 1	model 2	model 3	model 4	model 5	model 6
Ag	20.5616* (7.4377)	88.5157 (62.7667)	20.0467 (77.9447)	116.2138 (82.5045)	114.47 (88.20990)	112.6136 (88.2375)
Ag ²		-1.0384 (0.9335)	-0.21788 (1.1180)	-1.6361 (1.1926)	-1.6366 (1.2875)	-1.6179 (1.2899)
Lo			397.6609*** (220.9165)	591.978*** (352.4186)	669.80*** (350.802)	671.624*** (353.9394)
Hh				59.5178 (51.9237)	69.0773 (55.2423)	67.2515(55.7328)
Edu					23.3775 (23.2321)	24.7408 (23.4933)
Pcp						3.6645 (5.1920)
Fcpt						
Ot						
Ep						
Lh						
Hwpd						
Dwpw						
No of obs	77	77	77	58	58	58
cons.	956.7526* (263.886)	-98.5226 (1021.125)	917.5561(1202.9 86	-1064.907 (1233.363)	-1227.369 (1346.819)	-1291.277 (1333.212)

R²	0.992	0.1162	0.1811	0.2343	0.2488	0.2544
F	7.64*	4.48	3.38	6.39	4.88	4.49
Root MSE	463.06	461.77	447.51	393.63	393.62	395

Source: Computed by the author.

(*) significant at 5%; (**) significant at 1% and (***) significant at 10% . Robust Standard Error in Parenthesis.

Table 4b : Stepwise Regression Results on Earnings; Dependent variable(Ea) (robust)

variable	model 7	model 8	model 9	model 10	model 11
Ag	211.3774* (80.4064)	211.084* (815454)	211.3015* (837204)	184.0541* (740622)	158.6143* (70.3897)
Ag²	-2.9316* (1.1680)	-2.9287*(1.1828)	-2.9292*(1.2144)	-2.3727* (1.0616)	1.9878*** (1.0067)
Lo	76.2978 (326.5575)	76.7610 (330.6479)	11.2283 (341.3883)	-532.5758 (367.92)	-265.6173 (363.9868)
Hh	75.2809 (53.2015)	75.2276 (53.6898)	65.2646(54.4526)	72.9319 (47.2677)	57.6188 (46.7386)
edu	22.8325 (22.4700)	23.0331 (23.0674)	24.3506(24.3543)	-8.8826 (21.3148)	-10.8274 (22.3795)
Pcp	2.8819(4.3191)	2.8685(4.3191)	3.5233(4.2591)	-0.6657 (4.5455)	-1.1172 (4.3040)
Fcpt	-2.9907* (0.8435)	-3.0034*(0.8489)	-3.1207*(0.8711)	-3.7058* (0.8962)	-3.4314* (0.8380)
Ot		-12.8050 (93.5972)	-26.6077(95.596)	155.3696 (104,8638)	154.5719 (95.3201)
Exp			26.0896(27.5519)	17.90232 (23.2103)	16.3470 (22.9954)
Lh				512.3788*** (174.8226)	521.2936* (152.6304)
hwpd					74.3793 (48.2054)
No of obs	57	57	57	57	57
cons.	-2332.252 (1194.373)	-2314.435*** (1226.17)	-2377.877*** (1234.612)	-1840.048 (1125.321)	-2260.136 (951.693)
R²	0.3898	0.3899	0.3983	0.5211	0.5471
F	17.03	15.25	10.63	20.97	22.77
Root MSE	363.83	367.57	368.89	332	327

Source: Computed by the author.

(*) significant at 5%; (**) significant at 1% and (***) significant at 10% . Robust Standard Error in Parenthesis.

In the stepwise regression results presented in tables 4a and 4b above, eleven regressions were estimated.

In **model 1**, only age of the okada riders was regressed on earnings and it was significant with a positive sign as expected. This implies that as the age of commercial motorcyclists increases, the daily earnings will also increase. This is because an operator will continue to gain more experience and understanding of the business as his age increases.

Model 2: In this model age square (ag^2) was controlled for and that no variable was significant. In **model 3**, location (Lo) was introduced as a new variable and it came out as the only significant variable with a positive sign. This connotes that commercial motorcycle operators at the urban areas earned on the average ₦ 397.66 higher than those who operate in the rural setting daily.

Model 4: In this model, household size (Hh) was included as variable. And that location is again the only strong positive determinant of earnings of commercial motorcyclists in Kwara State, Nigeria. The results show further that operators in the urban centers earn ₦ 591.97 higher on daily basis than the rural cyclists. Location was also the only significant variable with a positive sign after education (Edu) and passengers carried per day (Pcd) were introduced in **models 5** and **6** respectively. The explanation in model 3 still holds for models 5 and 6.

In **Model 7**, we control for average fare charged per trip (fcpt). The result depicts that the significant determinants of earnings are age of commercial motorcycle operators (Ag) with a positive sign; Ag^2 ; and average fare charged per trip with negative signs. In this connection, as the age of *okada* riders increases, daily earning increases. Ag^2 bearing a negative sign denotes that as the age of commercial motorcycle operators increases beyond the youthful stage, the daily earnings will fall. This will be the situation towards old age when the operators will not have the required energy to operate like the relatively younger ones because of the agility involved in the business. The negative sign of average fare charged per trip (fcpt) implies that, ₦ 1.00 increase in fare charged per trip, will lead to ₦ 2.99 decrease in daily earnings.

In **models 8** and **9** ownership type (Ot) and experience (Ep) were controlled for respectively. It was found that age of operators (Ag); Ag^2 ; and fare charged per trip were the three significant variables in each of the models with the expected signs. The analysis in model 7 still goes for models 8 and 9. License holding was introduced in **Model 10**. The result show that, the core determinants of earnings among commercial motorcycle operators are age of respondents (Ag); license holding (Lh); with positive signs; and Ag^2 ; fare charged per trip (fcpt) with negative signs. The explanation on Ag; Ag^2 ; and fare charged per trip (fcpt) remain the same as given in model 7. The results show further that licensed *okada* operators earn ₦ 512.38 higher than non licensed operators.

Model 11: In this model we control for number of hours worked per day (hwpd). Results from this model show that the significant variables are age of respondents (Ag); license holding (Lh) with positive signs and Ag^2 ; fare charged per trip (fcpt) with negative signs. The interpretations on the explanatory variables above given in models 7 and 10 hold for model 11.

Model 11 is the best model because it gives the lowest Root MSE of 327. Ramsey RESET test using power of the fitted values of earnings per day (Ea) of *okada* operators was conducted to ascertain this claim. The results show that the model has no omitted variables as shown in table 5 below.

Table 5

Ramsey RESET test using powers of the fitted values
on Earnings per day (Ea)

Ho: model has no omitted variables

F(3, 42)= 1.36

Prob> F= 0.2684

5. CONCLUSION

This study evaluated the determinants of earnings among commercial motorcycle operators in Kwara State, Nigeria. Commercial Motorcycle business is a source of livelihood as it provides income for the unskilled, semi-skilled and the socially marginalized. The strong determinants of earnings are age of respondents; age^2 ; average fare charged per trip; Location; and license holding. Education was not significant in any of the models. This implies that the position of the Human Capital Theory in terms of earnings of the employed and self employed does not hold in the informal transport sub-sector. It is therefore, recommended that government should formalize and regulate the activities of commercial motorcycle operators to strengthen the business. In this way, transport service delivery to the people will be enhanced; earnings of the *okada* riders will equally be improved to maximize their welfare.

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