Socioeconomic Factors as Predictors of Entrepreneurial Behaviour in Poultry Farm

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Abstract

This paper sets out to assess the effect of socioeconomic factors on the likelihood of respondent being a poultry farm entrepreneur. The 275 poultry farms registered with the Livestock department of Delta State Ministry of Agriculture, Delta State, Nigeria, was the population studied. Data on socio-economic characteristics of poultry farmers and their relationship with the farms were collected with the aid of questionnaire. Data obtained were analyzed using descriptive statistics and binary logistic regression. The results revealed that the ages of respondents ranged from 18 to 68 years with a mean of 43.91 years and a standard deviation of 9.29; the age group 38 - 47 years had the highest frequency of poultry entrepreneurs (39.60%). Majority of poultry operators (42.18%) had either a diploma or certificate of education. Other findings were that age, gender, number of years of study and nature of parents'occupation were socio-economic factors which significantly affect the likelihood of the respondent being a poultry farm entrepreneur. The authors recommend that entrepreneurial development programmes should take cognizance of these factors in their design.

Key words: Entrepreneur, determinants, likelihood, logistic regression

1. Introduction

Kilby's (1971) apt description of the entrepreneur as a heffa-lump underscores the difficulty in capturing the total image of the entrepreneur. Heffa-lump, Kilby said, is a rather large and very important proverbial animal which is variously described by its hunters depending on the side from which a hunter caught sight of it. The on-going debate in the literature about the identity of the entrepreneur tends to suggest that the different sides so far captured and described are yet to perfectly fit together. It is probable that there are gaps in the fragmented sides so far identified or like in a game of jig saw puzzle, the right permutation of the pieces of the jig saw puzzle to make the required whole remains elusive because nobody has a comprehensive picture of the object. Furthermore, because individuals have identified the entrepreneur generally from the perceptive of their respective discipline, it may not have sufficiently dawn on researchers to allow for the possibility of viewing the entrepreneur as the product of psychological traits impacted upon by factors submitted by researchers from other discipline. For example, the views of the psychologists that the entrepreneur can be identified by such traits as need for achievement (n Ach), internal locus of control, Risk taking, need for autonomy, Tolerance of ambiguity, need for affiliation among others (Driessen and Zwart, 2002) may still be true but like the colour of an object exposed to the effect of the weather, the original sole effect of these traits on the identity of the entrepreneur may have been impacted upon by one or more non psychological factors. Such interaction is likely to have a reinforcing or weakening effect on psychological traits in the individual being an entrepreneur. For example, Jackson and Okhomina (2006), two behavioral theorists, affirmed that the level of education of the individual entrepreneur and his/her prior experiences in a related business are other factors that influence business outcome. This is to say that prior experience is essential to being an entrepreneur. Low, Hendersen, and Weiler, (2005) added that proximity to densely populated area, infrastructure (roads and telecommunication networks, access to financial capital) also affect business success. Thus while psychological traits may be regarded as push factors into the entrepreneurial class, the non psychological factors may be regarded as pull factors since they serve to attract the individual into being an entrepreneur. There is therefore the likelihood of varying factors interaction in the making of the entrepreneur. Drucker (1985) belongs to this school of thought when he said that individuals can be taught to become entrepreneurs. Baran and Velickaite (2008) are however of the view that entrepreneurs are born even though the "nuts and bolts of entrepreneurship can be studied and learned,

the soul of the entrepreneur is something else altogether". But it needs to be ascertained whether non psychological factors have any effects on the likelihood of an individual being an entrepreneur.

This study therefore, using the poultry subsector of the agricultural sector of Delta State as a premise assesses the effect of socioeconomic factors on the likelihood of respondents being a poultry farm entrepreneur. The hypothesis tested was H_0: Socio-economic factors do not affect the likelihood of a poultry farmer being a poultry farm entrepreneur

2. Materials and Methods

The study area was Delta State of Nigeria. Nigeria lies between latitude 4^0N and 14^0N of the Equator and between longitude 3^0E and 15^0E of the Greenwich Meridian. There are 25 local government areas (LGAs) in the Delta State and has its headquarters at Asaba. The State lies between longitude 5^0 and 6^0 45^1 East and latitude 5^0 20^1 and 6^0 30^1 North of the Equator.

The study covered the three agricultural zones Delta State State, namely; Delta North, Delta Central and Delta South Agricultural zones. Primary data were collected from the 275 poultry farmers in Delta State as per records of the Livestock Department, Delta State Ministry of Agriculture, Asaba, using copies of a structured questionnaire.

The questionnaire collected information on the socio-economic characteristics of the farmer (age, education, and family background, position on the farm). Copies of the questionnaire were administered to poultry farm owner-Managers, poultry farm owner non-Managers and poultry farm non-owner-Managers and Supervisors. Field officers of the Livestock department of the State ministry of agriculture assisted in administering the questionnaire.

Descriptive statistics such as mean, standard deviation and frequency distribution were used to summarize the data on the socioeconomic characteristics of respondents. The objective of this study which was "to determine the effect of socioeconomic factors on the likelihood of the respondent to be a poultry farm entrepreneur" was captured by using binary regression model. There are two possible outcomes in the dependent variable, namely; entrepreneur and non entrepreneur

The use of binary logistic regression is indicated where the categorical response (dependent) variable has two alternative events coded "0" or "1" and at least one explanatory variable is continuous (Upton and Cook, 2008). Logistic regression applies maximum likelihood estimation (MLE). MLE attempts to maximize the log likelihood, that is, how likely it is (the odds) that the observed values of the dependent variable may be predicted from the observed values of the independent variables. Thus logistic regression estimates the odds of a certain event occurring, that is, it calculates changes in the log odds of the dependent, not changes in the dependent itself as ordinary least square regression does. The idea therefore is to determine the predictors of an individual respondent in the population responding with 1 or 0 given his/her socioeconomic characteristics. The binary logistic regression model is generally expressed as:

$$f(Z) = \frac{1}{1 + e^{-Z}} \quad \text{.....(1)}$$

Where: f (Z) is the event or dependent variable, e is the exponential of the predictors. The exponent of the predictor (e^{-z}) indicates the log odds in favour of the respondent being an entrepreneur. And z is a vector of predictor variables defined as:

$$Z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_n$$

Where:

Z is the logit or log odds of the dependent variables (the event that the respondent is an entrepreneur), β_0 is the intercept and β_1, β_2 to β_n are the regression coefficients of the independent variables x_1, $x_{2,...}$ x_n are the independent variables and n is the number of independent (X) variables in the model. The intercept (β_0) is the value of Z when the value of all explanatory variables is zero. The β_n parameter estimates is interpreted as the additive effect on the log odds ratio for a unit change in the jth explanatory variable. In other words, the regression coefficients describe the size of the contribution of the independent variables to the respondent being an entrepreneur. A positive regression coefficient means that the particular independent variable increases the odds of the individual respondent being an entrepreneur, while a negative coefficient means that the particular risk factor decreases the odds of the individual respondent being an entrepreneur. A large regression coefficient means that the risk factor strongly influences the probability of the event; while a near-zero regression coefficient indicates that the particular independent variable has little influence on the probability of occurrence of the event. Chen and Hughes (2004) and Abreu, Siqueira, Cardoso and Caiaffa (2008) reported that the same logistic model can be written in various forms but the version that shows the function of the probabilities that result in linear combination of parameters is written as:

$$In\ (P) = \frac{P_i}{(1-P_i)} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots \beta_n x_n \quad \text{.....(2)}$$

The output function logit (p_i) is the log of the odds that the respondent is an entrepreneur given that one or more explanatory variables (X_n) have occurred. The odd that an event occurs, in this case an entrepreneur, is a ratio of the number of respondents who are actually entrepreneurs (P) to the number of respondents who are not (1-P). Logit (*P*i) is a measure of the total contribution of all the independent variables used in the model. The logistic model for this study therefore is specified as:

$$ln \ldots. \frac{P_i}{(1-P_i)} = Z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots \beta_7 x_7 \quad \text{.....(3)}$$

Where:
Logit (P_i) = the probability that the event entrepreneur occurs
X_1 = age (Age) (continuous)
X_2 = gender (Gen) (male =1, otherwise, 0)
X_3 = any prior experience (Ape) (yes = 1, otherwise, 0)
X_4 = Position in family (PIF)
X_5= Number of years of schooling (NS) (continuous)
X_6 = Fired from job (FJ) (yes = 1, otherwise, 0)
X7= Nature of parents' occupation (NPO) (entrepreneur = 1, otherwise, 0)

Age is a continuous variable. For gender (Gen) male was coded "Gen 1" and female (Gen 0"). A respondent with any prior experience (Ape) was coded Ape (1) and Ape (0) for respondents who have no prior experience. There are four categories of position in family (PIF) namely; oldest child (PIF 1) middle child (PIF 2), youngest child (PIF 3) and Others (PIF 4). Thus PIF 4, the highest coded is the reference category. A respondent who has been fired from job was coded FJ "1" and FJ "0" if otherwise. The nature of respondents'parents' occupation (NPO) was coded NPO 1 for respondents with parents in self employment and NPO "0" for respondents with parents in wage employment.

The Wald statistic was used to test the significance of individual independent variables. The overall fit of the model was tested using the Hosmer and Lemeshow's goodness of fit test. A finding of non significance indicates that the model adequately fits the data. The Omnibus statistic, the equivalent of the F-test in linear regression, was used to test the null hypothesis that all slope coefficients are simultaneously equal to zero. Gujarati (2004) however opined that in binary dependent models it is the expected signs of the regression coefficients and their statistical and or practical significance that are of prime importance and not the goodness of fit which is only of secondary importance

3. Results And Discussion

3.1 Socio-economic characteristics of Poultry farmers

Table 1 shows the age distribution of poultry farmers in Delta State. The figures in bracket are the percentage of the population of poultry farmers in the respective group. The ages of the respondents ranged from 18 years to 68 years with a mean of 43.91 years and a standard deviation of 9.29 years.

The age group 38 - 47 years has the highest frequency of poultry farm operators (39.60%). This was followed by the age group 48 – 57 (34.20%) and 28 – 37 years (13.50%). Fitzsimons, O'Gorman, Hart and McGloin (2003) in their study of the Global Entrepreneurship Monitor (GEM) countries found that the age group 25 to 34 years was the modal age bracket for men and women who are active as entrepreneurs.

The gender distribution of poultry farmers also in Table 1 reveals that 58% of the respondents were female and about 42% male. About 77.45% of the respondents were married and 20% had never married. Only 2.55% were single again. (Table 1)

3.2 Human capital characteristics

The distribution of poultry farmers by qualification is shown in Table 2. The figures in bracket are percentages of the column total. The Table 2 indicates that 4.36% of the population had no formal education and another 4.36% had primary school leaving certificate. Twenty one (21%) had senior secondary school certificate (SSSCE) or its equivalent, 42.18%

had national diploma (ND) or National Certificate of Education (NCE) and 24% had a university degree or its equivalent. Also, 4% indicated holding a higher degree. Middle level manpower, that is ND/NCE holders, thus constituted the majority of operators in poultry production.

The number of years of experience prior to setting up the poultry farm is also shown in Table 2. About 65.45% of the population had experience in poultry management prior to being in the present farm. From this, it can be deduced that apprenticeship is an important means of human capital development in poultry production in Delta State.

3.3 Socio-economic characteristics of poultry farmers and the likelihood of the respondent being a Poultry entrepreneur

To determine the effect of socioeconomic factors on the likelihood of a poultry farmer being a poultry farm entrepreneur, the researchers tested the hypothesis:

H_0: Socio-economic factors do not affect the likelihood of a poultry farmer being an entrepreneur.

The logistic regression result of the test of the hypothesis is presented in Table 3. The enter method was used, that is, all model terms were entered in one step. The Nagelkerke R^2 was 0.28 indicating that the independent variables in the logistic regression model were able to explain about 28% of the variation in the decision to become entrepreneur. The Homer and Lemeshow test of goodness of fit result (X^2 =7.89, df = 8 and P = .45) failed to reject the null hypothesis that there is no difference between observed and model predicted values. Hence the model estimates fit the data at an acceptable level. The test of adequacy of fit of the model was also supported by the Omnibus tests of model coefficients (X^2 = 42.06, df = 9 and P = 0.00). That the Omnibus test is significant indicates that socio-economic factors affect the likelihood of an individual being a poultry farm entrepreneur. Hence the null hypothesis is rejected and the alternative hypothesis that Socio-economic factors affect the likelihood of a poultry farmer being an entrepreneur is accepted.

The binary regression result had achieved significant success given the various test results of Homer and Lemeshow test and Omnibus test. The apparently low Nagelkerke R^2 of 0.28 may be attributed to the fact that: firstly, the decision to become an entrepreneur is not influenced by only socio-economic factors. There are other factors like psychological traits, culture, government policy and macro economic factors, peers groups and role model, access to finance and, of course the inborn qualities of the individual, to mention but a few. Hence it is more appropriate to view the logistic regression coefficients as partial regression coefficients. Secondly and more importantly, Gujarati (2004) stated that in binary dependent variable models, what matters is the expected signs of the regression coefficients and their statistical and or practical significance that are of prime importance.

Coming to the individual independent variables, the result suggests that age, gender (Gen "1"), number of years of study (NS) and nature of parents'occupation (NPO) are socio-economic factors which significantly affect the likelihood of the respondent being a poultry farm entrepreneur (P < 0.05). For age, an increase by one year will increase the odd ratio of being an entrepreneur by 1.108 times over a person one year younger, all things being equal.

For gender, being a male reduces the odd ratio of being a poultry farm entrepreneur compared to the female (EXP = 0.358, and (B = -1.028). In other words, female are more likely to become poultry farm entrepreneurs than male. About 58.18% of the poultry farmers were females. That the odd ratio of being a poultry farm entrepreneur was higher for the female may suggest gender preference and for that reason may indicate a wisdom to take into consideration in designing economic empowerment programmes.

The number of years of study also significantly affect the decision of being a poultry farm entrepreneur. A one year increase in the number of years of schooling increases the odd ratio of being a poultry farm entrepreneur by 1.131 times that of the default person. If the odd ratio of being a poultry farm entrepreneur increases with the number of years of study, the likely assumpion is that the amount of relevant knowledge and skill acquired also increase. This finding tend to support Holcombe (2003) posited that there is a close connection between the advance of knowledge and the production of entrepreneurial activity especially in situations where investing in knowledge advancement is profitable entrepreneurially. Hence there might be the need to further develop the existing farmers and also intending operators by way of knowledge and skill acquisition.

On the effect of nature of parent's occupation on the decision to become a poultry entrepreneur, the odd ratio of being an entrepreneur (3.016), was significantly higher for respondents with self employed parents (P = .02) compared to those who have wage employed parents. Hence self employed parents are effective role models to their children becoming entrepreneurs.

The independent variable PIF (position in farmily) where the "Other position" was the refrence category, indicates that being the oldest child (PIF 1) reduces the likelihood (-0.019) of the individual being an entrepreneur, though not significantly so (P = 0.981). It is the *a priori* expectation that the first born or the eldest child in the family has a higher

likelihood of being an entrepreneur. The result in Table 3 failed to support that position. Furthermore, although the youngest child (PIF 3) has the highest beta coefficient of 1.136 and therefore a relatively higher odd ratio of being an entrepeneur than children in PIF 1, PIF 2 and the referent category, the coefficient is not significant (p = .342). Hence the results tend to indicate that the position of a child in the family does not affect the likelihood of an individual becoming a poultry farm entrepreneur.

All in all, Table 4 which shows the predicitve power of the model to classify the respondents, revealed that the model achieved overal 89.80% success in classifying the respondents.

4. Conclusion

Socio-economic factors are significant predictors of entrepreneurial behaviour in farm poultry production, in particular number of years of study, gender and having parents in own businesses. These two factors are essential sources of acquiring requisite knowledge and entrepreneurial self efficacy, hence they should be given utmost consideration in the design and development programmes for agribusiness entrepreneurs, in small-scale poultry development programmes. Furthermore, given the gender preference of women in poultry production in Delta State, Nigeria, government should explore small-holder poultry production as a tool of economic empowerment and poverty reduction among rural women.

Table1: Demographic characteristics of Poultry farmers

Age distribution of farmers

Age group	Delta North	Delta Central	Delta South	Total
18 – 27	2 (5.10)	12 (6.80)	6 (10.20)	20 (7.30)
28 – 37	4 (10.30)	30 (16.90)	3 (5.10)	37 (13.50)
38 – 47	22 (56.40)	69 (39 00)	18 (30.50)	109 (39.60)
48 – 57	6 (15.40)	60 (33.90)	28 (47.50)	94 (34.20)
58 – 67	4 (10.30)	5 (2.80)	4 (6.80)	13 (4.70)
68 – 77	1 (2.60)	1 (0.60)	0 (0.00)	2 (0.70)
Total	39 (100.00)	177(100.00)	59 (100.00)	275 (100.00)

Gender distribution

Gender	Delta North	Delta Central	Delta South	Total
Female	17 (43.60)	106 (59.90)	37 (62.70)	160 (58.18)
Male	22 (56.40)	71(40.10)	22 (37.30)	115 (41.82)
Total	39(100.00)	177(100.00)	59(100.00)	275(100.00)

Marital status

Marital status	Delta North	Delta Central	Delta South	Total
Single	2(5.13)	39(22.03)	14(23.73)	55(20.00)
Married	37(94.87)	132(74.58)	44(74.58)	213(77.45)
Single again	0(0.00)	6(3.39)	1(1.69)	7(2.55)
Total	39(100.00)	177(100.00)	59(100.00)	275(100.00)

Source: Field survey 2010

Table 2: Human capital characteristics of Poultry farmers

Formal educational qualification

Qualification	Delta North	Delta Central	Delta South	Total
No formal education	1((2.60)	9(5.10)	2(3.40)	12(4.36)

PSLC	0(0.00)	6(3.40)	6(10.20)	12 (4.36)
SSSCE/equivalent	11(28.20)	37(20.90)	10 (16.90)	58(21.09)
ND/NCE	12(30.08)	82(46.30)	22(28.80)	116(42.18)
First degree/equivalent	12(30.08)	37(20.90)	17(6.18)	66(24.00)
Higher degree	3(7.70)	6(3.40)	2(3.40)	11(4.00)
Total	39(100)	177(100)	59(100)	275(100)

Prior experience

Any prior experience	Delta North	Delta Central	Delta South	Total
Yes	32(82.10)	109(61.60)	40(67.80)	180(65.45
No	7(17.90)	68(38.40)	19(32.20)	95(34.55
Total	39(100.00)	177(100.00)	59(100.00)	275(100.00)

Source: Field survey 2010

Table 3: Logistic regression result of predictors of entrepreneurial behaviour

	β	SE	Wald	df	Sig.	**Exp.(β)**
Age	0.102	0.025	16.080	1	0.000**	1.108
Gen(1)	-1.028	0.494	4.340	1	0.037*	0.358
Ape(1)	-0.352	0.445	0.626	1	0.429	0.703
PIF			2.627	3	0.453	
PIF(1)	-0.019	0.852	0.001	1	0.982	0.981
PIF(2)	1.136	0.836	0.616	1	0.432	1.927
PIF(3)	1.136	1.196	0.902	1	0.342	3.115
NS	0.123	0.053	5.471	1	0.019**	1.131
FJ(1)	-0.670	0.575	1.358	1	0.244	0.511
NPO (1)	1.104	0.452	5.968	1	0.015**	3.016
Constant	-3.994	1.442	7.667	1	0.006	0.018

*Source: Field survey 2010; * Significant at 1% critical level;** Significant at 5% critical level*

Table 4: Model classification table

Observed	Non Entrepreneur	Entrepreneur	%Correct
Non Entrepreneur	7	25	21.90
Entrepreneur	3	240	98.80
Overall			89.80

Source: Derived from field data.

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