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Research Report

Poverty Level Among Poultry Farming Households in Southwest Nigeria; A Multidimensional Approach.

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**POVERTY LEVEL AMONG POULTRY FARMING HOUSEHOLDS IN
SOUTHWEST NIGERIA; A MULTIDIMENSIONAL APPROACH.**

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Abstract

This study examines the determinants of multidimensional poverty level among poultry farming households in Oyo State. A multistage sampling technique was employed to collect data from 210 poultry farmers within four local government areas of the state using well-structured questionnaires. Descriptive statistics, Z-test, Alkire-Foster multidimensional poverty indices and Tobit regression model were used in data analysis. Result shows that; relative to education dimension, highest incidence of deprivations among the poor poultry farming households exists in the health and standard of living dimensions where 88% of the poor poultry farmers are deprived of access to clean water and quality healthcare. Education level, age, household size, cooperative membership, primary labour source, farm size, and quality health access determine the level of multidimensional poverty among poultry farming households in the study area; hence, policy options should favor these factors while discouraging large household size and sole dependence on family labor.

Keywords: Z-test, Multidimensional Poverty, Poultry, Southwest Nigeria, Tobit Regression.

1. Introduction

The largest share of the world's poor lives in rural areas, and half of the poor keep livestock^{20, 23}. In the livestock subsector of the Nigeria economy, the need to secure the quality and quantity of food supply for the increasing population, as well as the need for animal proteins, and tendency to maintain a wholesome and balanced diet, have all made the Poultry sector a significant industry worldwide.

Of the total GDP Accrued to the Agricultural industry within the Nigeria's Economy, the various sub-sector contributions includes; Crop (87.2%), Livestock (9.0%), Fishery (3.0%) and Forestry (1.2%) respectively, making the livestock sector the second largest contributor^{11, 14}. The Nigerian poultry industry is however dominated by small-holder farmers rearing less than 1000 birds¹³, employing different production strategies alongside little resources available to them bringing about low productivity, inefficient production and low income earnings; linkable to poverty. Poverty is described as a serious menaces challenging many African countries, a social problem whereby the household income is insufficient to ensure suitable livelihoods, consequently leading to hunger, malnutrition, ill health and mortality from illness¹⁵.

Agriculture has been the locus of poverty in Sub-Saharan countries, especially in Nigeria where over 80% of the country's population are directly or indirectly dependent on agriculture for their livelihood while contributing about 24.11% of the nation's GDP, more than 70% of Nigerian people are however poor^{14, 17}. Poverty reduction and elimination hence remain key issues of development globally.

Also, measurement and analysis of poverty have canonically hinged hugely on the single dimension; expenditure/monetary approach as only a few of the recent studies have adopted

the multidimensional approach. Recent developments in literature have highlighted serious limitations of monetary approach to poverty Measurement ¹².

⁸ studied poverty among farming households in Osun state, Nigeria, while ⁵ examined income inequality and poverty among farming households in Southwest Nigeria, all using the income approach. On the other hand, ² investigated the trend and determinants of multidimensional poverty in rural Nigeria using a multidimensional approach, the Alkire-Foster methodology and the logit model were employed in the analysis. The result showed that about 70% of the households are headed by males. Also more than one-third have no education. The health, asset and education dimensions contributed most to poverty, household size are larger for female headed households compared to male headed households, ⁹ analysed the determinants of farm household poverty in south-western Nigeria. The paper build on sample survey data collected in 2005. They found that 30% of the households were poor, subsisting below the average poverty line of 1985 naira (1US = 126 naira) per capita per month. The prevalence of poverty was found to be higher among older, small-scale farmers and those who do not belong to any farmers' cooperative group. Econometric analysis shows that households with smaller number, headed by male and educated head are better-off in terms of poverty than their counterparts with larger number, headed by female and uneducated head.

However, no recent study have explored the relationship between poultry farming and poverty in the study area in spite of the widespread Poultry production activities in Southwest Nigeria, in which Oyo State has the highest incidence of registered poultry farmers in Nigeria ^{10, 19} In furtherance to the existing multidimensional poverty studies, this study besides exploring the multidimensional poverty levels (headcount, incidence and intensity of deprivations) among the ten indicators of the three dimensions suffered by the poor, the relative deprivations of the non-poor is also analysed by exploring the relative dimensions

wherein they are deprived albeit their deprivation counts do not sufficiently accrue to place them below the poverty line. Also, their poverty status by socioeconomic and demographic status was explored.

This study therefore attempts to profile the welfare status, and assess the determinants of the level of multidimensional poverty among poultry farming households in Oyo State with a specific objective of estimating the multidimensional poverty status differentials of poultry farmers in the study area and analysing the determinants of their poverty levels.

2. Research methods

2.1 Study area

This study was carried out in Oyo State, South west Nigeria. The state's land area covers 35,743KM², situated within latitude 3°N and 5°N; between longitude 7°E and 9.3°E. The mean maximum and minimum temperature is 26.46⁰C, 21.42⁰C respectively while the relative humidity is 74.55%. With Oyo state being an agrarian state, cash crops like cocoa, rubber, kolanut, citrus, and food crops like rice, vegetables yam, cassava, and corn are largely cultivated. Rural households in the states rear sheep, goats, local chickens and pigs. Four (4) Agricultural Development Project (ADP) zones exist in the state as categorized by the Oyo state Agricultural Development Project (OYSADEP); Ibadan/Ibarapa zone, Oyo zone, Ogbomoso zone and Saki zone. All four ADP zones have varying degrees of poultry production activities. Also, intensive rearing of exotic breeds of cockerels, layers and broiler birds have become widespread in the study areas.

2.2 Sources of data/ Sampling techniques

The data for the study was obtained from primary sources through the aid of well-structured questionnaire. A multistage sampling technique was employed. The first stage involved random selection of two agricultural zones which are Ibadan/Ibarapa and Oyo

Agricultural zones from the four Agricultural Zones in the State (Ibadan/Ibarapa, Oyo, Saki, and Ogbomoso Zones). The second stage involved a random selection of three Local government areas under the Oyo agricultural zone and one Local government in Ibadan/Ibarapa Zones, due to the relatively larger poultry production activities in the Oyo agricultural zone compared to Ibadan/Ibarapa. The third stage involved a random selection of 19 villages from Ido, Afijio, Oyo central, and Oyo west local government areas, from which 240 poultry farmers were randomly selected in the final stage where Only 210 responses were used in data analyses due to incomplete questionnaires. Data collection was between June-August, 2017 with the supports of volunteer field enumerators.

The Statistics and Data (STATA) '14 analytical tool was used in data analysis.

3. Analytical techniques

3.1 Multidimensional Poverty Index (MPI)

The multidimensional poverty index (MPI) measure developed by ⁶ was used to measure the multidimensional poverty index of the poultry farmers. The methodology includes two steps: an identification method (ρ_k) that identifies 'who is poor' by considering the range of deprivations they suffer, and an aggregation method that generates an intuitive set of poverty measures ($M\alpha$).

3.1.1 Choice of weighted dimensions, indicators and weights.

In line with ⁷ three dimensions; health, education, and standard of living would be used to compute the multidimensional poverty indices (MPI) of the respondents. These are measured using 10 indicators. Poor households are identified and an aggregate measure constructed using a methodology proposed by ⁷. The dimensions and indicators are:

A. Education: (each weighted equally at 1/6); Years of Schooling, child Enrolment

B. Health: (each weighted equally at 1/6); Quality healthcare and Health as a Limiting factor

C. Standard of Living: (each weighted equally at 1/18); Electricity, Drinking water, Sanitation, Flooring, Cooking Fuel, Assets.

When a household “X” is subject to a deprivation cut-off “z” and a poverty cut-off “k”, a household that possesses the indicator of each dimension is scored with the corresponding weight and zero if otherwise. The maximum score is 100 percent; with each dimension equally weighted (where each dimension is 33.3%). A cut-off of 33.3%, which is the equivalent of one-third of the weighted indicators, is used to distinguish between the poor and non-poor. The deprivation headcount (H_0), Average intensity of deprivation (A) and the dimension adjusted head count (M_0) can be obtained using the following model ⁶;

$$H_0(x; k; z) \equiv \frac{1}{N} \sum_{n=1}^N I[c_n \geq k] = \frac{q}{N} \dots\dots\dots(i)$$

$$A(x; k; z) \equiv \frac{\sum_{n=1}^N I[c_n \geq k]c_n}{q} = \frac{\sum_{n=1}^q c}{q} \dots\dots\dots(ii)$$

$$M_0 \equiv \left[\frac{1}{N} \sum_{n=1}^N I[c_n \geq k] \right] \left[\frac{\sum_{n=1}^q c}{q} \right] = H_0 \cdot A \dots\dots\dots(iii)$$

Where: H_0 = Head count ratio, A= Average intensity of deprivation, M_0 = Adjusted headcount ratio or the multidimensional poverty index (MPI), q = the number of people who are multidimensionally poor, N = Total population, C = is the deprivation score that the poor experience, $I ()$ is indicator that takes the value of 1 if the expression in parenthesis is true and zero if otherwise.

3.2 Test of Significance

$$\frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}} \dots\dots\dots (iv)$$

Where; \bar{X}_1 = Mean parameters of first category, \bar{X}_2 = Mean parameters of second category, S_1^2 = Variance of parameters of first category, S_2^2 = Variance of parameters of second category, n_1 = Number of selected first category, n_2 = Number of selected second category.

3.3 Tobit regression

The Tobit regression model was used to explore the relationship between poverty depth and the various factors affecting it. It is preferred because it better handles censored dependent variables and it is superior to the logit and Probit models as it measures the probability and the intensity of multidimensional poverty. Following ²², and used by ¹, the model is specified as follows;

$$Y_i = Y_i^* = \beta X_i + \mu_i \text{ if } Y_i^* > C \dots\dots\dots (v)$$

$$0 = \beta X_i + \mu_i \text{ if } Y_i^* < C \dots\dots\dots (vi)$$

Where: Y_i is the weighted multidimensional poverty index; assumes zero value (discrete) when the household is not multidimensionally poor and continuous when they are poor i.e. equal to Y_i^* . And X_i is the vector of explanatory variables; β is $k \times 1$ the vector of unknown parameters to be estimated, and $\mu \sim N(0, \sigma^2)$. C is the deprivation cut off i.e. 0.33.

The model is explicitly specified as follows:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \dots\dots + \beta_{13} X_{13} + \mu_i \dots\dots\dots (vii)$$

Where; X_1 = Gender (dummy; Male=1, Female=0), X_2 = Marital status (dummy; 1, if married 0, if otherwise), X_3 = Level of formal education (in years), X_4 = Highest level of education in

the household other than household head's (years), X_5 = Age, X_6 = Household size, X_7 = Farming experience in years), X_8 = Farming as Primary occupation (dummy yes=1, otherwise=0), X_9 = Access to credit (Yes= 1; No=0), X_{10} = Access to infrastructure i.e. electricity (dummy; Yes= 1; No=0), X_{11} = Sole dependence on primary labor (Dummy; No=1, Yes=0), X_{12} = Farm Size (Number of Stock), X_{13} = Cooperative membership (dummy; Yes=1; No=0), X_{14} = Quality health service access (dummy; Access to hospital=1; Otherwise=0), μ_i = Error term.

4. Results and discussion

4.1 Multidimensional poverty status by socioeconomic characteristics

Table 1 shows the cross tabulated incidence of deprivation across the various weighted dimensions among the poor and Non-poor poultry farmers in the study area. The deprivation status of the Poor and Non-poor is presented for comparison purpose where the Non-poor are likely to be deprived in some dimension with deprivation counts not sufficiently accruing to categorise them as poor.

With respect to standard of living and health dimensions, the result shows that about 55% and 27% respectively are deprived of access to clean water and quality healthcare respectively, wherein 88% of the poor poultry farmers in the study area are deprived of access to clean water and poor access to quality healthcare. Also, fairly huge proportion (about 36%) of the total population of poultry farming households are deprived of asset acquisition while about 23% of the total population of poultry farmers in the study area uses substandard cooking fuel. There exists a significant difference between the deprivation scores of the Poor and Non-poor with respect to these indicators.

From table 3, the MP status of poultry farmers in the study area by gender shows that, although the female headed households suffer higher deprivations, when compared to the

female headed households, the mean difference test shows no significant difference in the poverty status of this two categories of poultry farming households. On the MP status of poultry farmers in the study area by age of household head shows that the modal age group is 41-50 years implying that most of the poultry farmers in the study area are still in their productive years where the poverty headcount of the poor category below 30 years of age was highest (about 28%), suffering from about 47% of the averagely weighted indicator compared to those above 50 years of age with the least MP headcount of 9%, suffering about 47% of the weighted indicator on the average.

Regarding their poverty status by marital status, about 29% of the single poultry farmers fell below the poverty line and deprived in 54% of the averagely weighted indicators while the poverty incidence is 16% for the married category, and are deprived in about 42% of the averagely weighted indicators, The mean difference test shows that the poverty status of single poultry farmers is significantly higher than their married counterpart, and significant at 1% level. This implies that marriage although reduces the intensity of multidimensional poverty, it is not a safety net out of poverty. As per their poverty status by household size, result shows that, the poverty status of poultry farming households with above 4 persons is significantly higher by 0.059277 than households with less than 4 persons at 10% level of significance.

Concerning their poverty status by primary occupation, result showed that poverty in households primarily engaged in poultry farming is significantly higher than households engaged in other non-farming activities at 5% level. This might be due to problems arising from disease outbreaks, high cost of inputs, product price instability etc., compared to those engaged in other non-farming activities with lesser risks and quagmires hence, relatively better off. Result on the poverty status of the poultry farming households by educational status of household head in years shows that about 89% of the poultry farming households

where household heads with no formal education are poor. The mean difference test reveals a significant difference in the years of formal education among the poor and non-poor poultry farmers at 1% level.

4.2 Multidimensional poverty status of the respondents.

From table 2, the estimates of Multidimensional poverty index of the poultry farmers in the study area at $K=3$ shows that about 20% of the poultry farmers are poor, suffering about 47% of the weighted indicators. The mean difference test reveals a significant difference between the deprivations suffered by the poor and Non-poor farming households at 1% level of significance, where the average intensity of deprivation suffered by a Poor poultry farming household is higher than that of a Non-poor counterpart by about 38% on the average.

4.2.1 Factors determining the level of multidimensional poverty

Gender of household head has a coefficient of -0.0609746, implying that, there is a likelihood of poverty reduction among male headed poultry farming households by -0.0609746, which is significant at 10% level while, the coefficient of level of farmers' education in years is -0.0043946. This shows that an additional year of formal education has a likelihood of reducing the poverty status of a poultry farmer by -0.0043946, and it is significant at 5% level. The coefficient of highest level of education besides that of household head is -0.0117401 implying that an additional increase in year of formal education of any other household members besides the household head's will likely reduce poverty status of a poultry farming household by -0.0117401, significant at 1% level. This could be linked to the effect of literate household members' positively influencing farmers' rational economic and productive decisions, compared to that which the farmers would have made on his own. This is in consonance with the findings of ²¹.

Besides, the coefficient of farmers' age in years is -0.003232. This negative relationship reveals that, a year increase in the age of farmers reduces the household's poverty status by -0.003232 and this is significant at 1% level. This might be due to the likelihood of older farmers being able to make judicious decisions in their farming activities yielding positive economic benefits. This is in consonance with the findings of ^{2,3}.

Also, the coefficient of Household Size is 0.0182945, implying that, an increase in household size has a likelihood of bringing about increase in poverty by 0.0182945 and this is significant at 1% level. This negative relationship is likely due to the fact that large households place a higher demand on household limited income relative to smaller households. This is in consonance with ^{3,16}, while, the coefficient of cooperative membership is -0.0386649, significant at 10% level. This relationship implies that membership of agricultural cooperative societies will likely reduce poverty of a poultry farmer by -0.0386649. This could be linked to the effects of various benefits accessible by cooperative members, such as access to; credit, improved production inputs and training which invariably enhance their production activities.

The coefficient of primary source of labour is -0.1132085. This implies that, sole usage of paid labour reduces poverty by -0.1132085, significant at 1% level. This might be due to the fact that paid labourers are remunerated hence subjected to managerial supervision, bringing about a relatively higher efficiency and productivity. While farm size has a coefficient of -0.000012. This negative relationship, significant at 10% level implies that a unit increase in the number of Birds will likely bring about reduction in poverty status by -0.000012. This might be due to the economies of scale enjoyed when farmers spread their variable production costs over the existing fixed costs. This is in consonance with the findings of ²¹.

The coefficient of access to quality health is -0.2162377 which implies that, access to quality health reduces poverty by -0.2162377, significant at 1% level. This might be due to the possibility that access to quality health promotes healthy living hence, facilitating farmers' increased efficiency and productivity which invariably translates to reduction in poverty status.

5. Conclusion

This study assessed the determinants of the level of Multidimensional Poverty (MP) among poultry farming households in Oyo state, Nigeria. Results shows that 20% of the poultry farming households fell below the poverty line, and suffering from about 47% of the weighted indicators on the average while about 80% are non-poor but suffering from about 9% of the weighted indicators on the average. With the highest incidence of deprivation in the health (access to quality health) and standard of living (access to electricity and potable water) dimensions, poverty is however more intense and widespread among poultry farmers lacking access to credit. Also, Gender of household head, Education level of farmers in years, highest level of education attained in the household other than household head's, Age of household head in years, household size, cooperative membership, primary source of labour, Farm size, and quality health access are found to significantly determine the level of poverty among poultry farming households in the study area at varying level of statistical significance.

Sequel to the findings from this work, it is recommended that, female headed households should be empowered, access to quality education, good housing, clean water, quality health facilities, credit, and good electricity should be enhanced, farmers education should be prioritized while discouraging large household size. Medium-large scale poultry production should be encouraged while discouraging sole dependence on family labor.

Finally, Cooperative membership should also be encouraged among poultry farmers in the study area.

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Table 1: Cross tabulation of the incidence of Deprivation across various indicators of the three dimensions by poverty status.

Dimensions	Pooled N=210			Poor N=169			Non-poor N=41			P-Value
	Freq.	Mean	Sddev	Freq.	Mean	Sddev	Freq.	Mean	Sddev	
Education										
Basic enrolment	14 (6.67)	0.1556	0.0416	13 (31.71)	0.1138	0.078	1 (0.5)	0.1656	0.012	P=0.000 ***
Child Enrolment	20 (9.52)	0.1507	0.0490	14 (34.15)	0.1097	0.080	6 (3.55)	0.1608	0.031	P=0.000 ***
Health										
Quality Health Care	55 (26.19)	0.0734	0.1230	36 (87.80)	0.0203	0.055	19 (11.24)	0.1479	0.052	P=0.000 ***
Sickness	24 (11.43)	0.1476	0.0531	9 (21.95)	0.1301	0.069	15 (8.88)	0.1518	0.047	P=0.018 ***
Standard of Living										
Electricity	51 (24.29)	0.0421	0.0238	25 (60.98)	0.0216	0.027	26 (15.38)	0.0470	0.020	P=0.000 ***
Clean Water	115 (54.76)	0.0251	0.0277	36 (87.80)	0.0068	0.018	79 (46.75)	0.0295	0.027	P=0.000 ***
Sanitation	44 (20.95)	0.0439	0.0226	25 (60.98)	0.0217	0.027	19 (11.24)	0.0493	0.017	P=0.000 ***
Housing	22 (10.48)	0.0497	0.0170	12 (29.27)	0.0393	0.027	10 (5.92)	0.0522	0.013	P=0.000 ***
Cooking fuel	47 (22.38)	0.0431	0.0232	26 (63.41)	0.0203	0.027	21 (12.43)	0.0487	0.018	P=0.000 ***
Asset	76 (36.19)	0.0267	0.0354	29 (70.73)	0.0163	0.026	47 (27.81)	0.0401	0.024	P=0.000 ***

Source: Field Survey data analysis result, 2017. Percentages parenthesized. ***P≤0.01,

**P≤0.05, *P≤0.1

Table 2. Multidimensional poverty status of poultry farming households.

Status	Average intensity of deprivation (A ₀)	Headcount ratio (H ₀)	Multidimensional poverty index (M ₀)	Freq.	Percent (%)
MPI Poor	0.46748 (0.12483)	0.195	0.09125	41	19.52
MPI Non-poor	0.092702 (0.08609)	0.805	0.07462	169	80.47
Pooled				210	100
Mean diff	0.37478	0.6125	0.01663		P=0.0000***

Source: Field Survey data analysis result, 2017. Standard deviation parenthesized.

***P≤0.01, **P≤0.05, *P≤0.1

Table 3. Multidimensional poverty status by socioeconomic characteristics of poultry farmers in the study area.

Variables	Multidimensional Poverty headcount ratio (H ₀)				Average intensity of deprivations /AIOD (A ₀)	
	Non Poor		Poor		Pooled	
Gender of Household head	Freq.	Percent	Freq.	Percent	Freq.	
Male	147	81.67	33	18.33	180	0.459 (0.333-0.778)
Female	22	73.33	8	26.67	30	0.50 (0.444 - 0.556), P=0.4184
Total	169		41		210	
Mean= 0.467	S.dev= 0.124					
	Non Poor		Poor		Pooled	
Age of Household head	Freq.	Percent	Freq.	Percent	Freq.	
<30	13	72.22	5	27.78	18	0.466 (0.333- 0.667)
31-40	40	78.43	11	21.57	51	0.404 (0.333- 0.50)
41-50	57	77.03	17	22.97	74	0.496 (0.333- 0.778)
51-60	39	90.70	4	9.30	43	0.472 (0.444-0.556)
>60	20	83.33	4	16.67	24	0.472 (0.389-0.50)
Total	169		41		210	
Min	20		25		20	
Max	76		80		80	
Mean	47.284		44.658		46.771	0.467
S.dev	11.855		13.003		12.100	0.124 P=0.000***
Marital Status	Freq.	Percent	Freq.	Percent	Freq.	
Married	133	83.65	26	16.35	159	0.423 (0.333-0.778)
Non married	36	70.59	15	29.41	51	0.544 (0.333-0.722) P= 0.0017***
Total	169		41		210	Mean= 0.467
Stddev						0.125

Continuation of Table 3

Household size	Freq.	Percent	Freq.	Percent	Freq.	
1-4	84	81.55	19	18.45	103	0.436 (0.333-0.556)
>4	85	79.44	22	20.56	107	0.495 (0.333- 0.778) P= 0.1311*
Total	169		41		210	
Mean	4.485		4.512		4.490	0.467
Min	1		2		1	
Max	12		30		14	P=0.9426
S.dev	1.991		2.721		2.146	0.125
Primary occupation	Freq.	Percent	Freq.	Percent	Freq.	
Farming	76	76.77	23	23.23	111	0.505 (0.333-0.778)
Non farming	93	83.78	18	16.22	99	0.419 (0.333– 0.667) P= 0.0284**
Total	169		41		210	
Mean						0.468
Stddev						0.125
	Pooled		Non-poor		Poor	AIOD
Years of formal education	Freq.	Percent	Freq.	Percent	Freq.	
<1	1	11.11	8	88.89	9	0.590 (0.50-0.722)
1-10	8	80.00	2	20.00	10	0.444 (0.444-0.444)
11-15	1	50.00	1	50.00	2	0.333 (0.333-0.333)
>15	159	84.13	30	15.87	189	0.440 (0.333-0.778)
Total	169		41		210	
Min	0		0		0	
Max	27		22		27	P=0.0000***
Mean	18.745		14.17		17.852	0.467
Stddev	3.888		7.749		5.191	0.125

Continuation of Table 3

Access to credit	Freq.	Percent	Freq.	Percent	Freq.	
Yes	33	89.19	4	19.52	37	0.444 (0.399-0.50)
No	136	78.61	37	21.39	173	0.469 (0.333-0.778)
Total	169		41		210	P=0.703
Mean						0.468
Stddev						0.125
Access to extension agent	Freq.	Percent	Freq.	Percent	Freq.	
Yes	40	80.00	10	20.00	50	0.389 (0.333-0.778)
No	129	80.63	31	19.38	160	0.493 (0.333-0.778)
Total	169		41			P=0.020**
Mean						0.468
Stddev						0.125
Years of farming experience	Freq.	Percent	Freq.	Percent	Freq.	
1-5	72	81.82	16	18.18	88	0.451 (0.333-0.556)
6-15	53	75.71	17	24.29	70	0.474 (0.333-0.722)
>15	44	84.62	8	15.38	52	0.216 (0.333-0.778)
Total	169		41		210	
Mean	11.53				11.119	0.468
Min	0				0	
Max	67				67	
Stddev	12.21				11.367	0.125

Continuation of Table 3

Scale of production	Pooled		Non-poor		Poor	
	Freq.	Percent	Freq.	Percent	Freq.	
1-1000	84	75.68	27	24.32	111	0.494
1001-5000	70	84.34	13	15.66	83	0.410
>5000	15	93.75	1	6.25	17	0.255
Total	169		41			
Mean	2749.5		1264.19		2459.48	0.468
Min	0		0		0	
Max	91875		6000		91875	P=0.2177
Stddev	7642.9		1484.65		6908.4	0.125*
Primary source of labour	Freq.	Percent	Freq.	Percent	Freq.	
Paid	93	91.18	9	8.82	102	0.414 (0.333-0.556)
Family	76	70.37	32	29.63	108	0.483 (0.333-0.778)
Total	169		41		210	P=0.1447*
Mean						0.468
Stddev						0.125
Access to quality health	Freq.	Percent	Freq.	Percent	Freq.	
Yes	142	96.60	5	3.40	63	0.433 (0.333-0.50)
No	27	42.86	36	57.14	147	0.472 (0.333-0.778)
Total	169		41		210	P= 0.5208
Mean						0.468
Stddev						0.125

Source: Field Survey data analysis result, 2017. ***P≤0.01, **P≤0.05, *P≤0.1
Minimum and Maximum AIOD parenthesized.

Table 4: Result of the log likelihood estimate of Tobit regression on the determinants of the level of multidimensional poverty index among poultry farmers

Variables	Coefficient	Standard error	P-Value (p>t)
Gender of household head	-0.0609746*	0.0433896	0.162
Marital status	0.0396631	0.0363612	0.277
Level of Educational (years)	-0.0043946**	0.0024758	0.077
Highest level of education attained in the household beside Household head's (years)	-0.0117401***	0.0019968	0.000
Age of Household Head in years	-0.003232***	0.0010571	0.003
Household Size	0.0182945 ***	0.0050492	0.000
Years of farming experience	0.0003308	0.0016618	0.842
Cooperative membership	-0.0386649*	0.0235494	0.102
Farming as your primary occupation	0.0084788	0.0277187	0.760
Access to Credit	0.0148478	0.0380494	0.697
Access to infrastructure	-0.0327965	0.046113	0.478
Primary source of labour	-0.1132085***	0.0285638	0.000
Farm size (layers)	-0.000012*	7.39e-06	0.105
Quality health access	-0.2162377***	0.0302981	0.000
Constant	0.8009467	0.0741835	0.000
Pseudo R2 = 1.4002	LR chi2(15) =177.01		
Log likelihood = 25.296826	Prob > chi2 = 0.0000		
169 left-censored observations at k <= 0.33			
41 uncensored observations			
0 right-censored observations			

Source: Field Survey data analysis result, 2017. Significance level *** P<0.01, **P<0.05, *P<0.10.