Effect of Microcredit on Poverty Status and Profitability of Poultry Egg Producers in Oyo State, Nigeria

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Abstract

This study was conducted to assess the effect of microcredit of Bank of Agriculture on poverty status and profitability of poultry egg producers in Oyo state, Nigeria. Primary data were collected through the administration of a well-structured questionnaire on the sampled poultry egg producers. Multistage sampling procedure was employed to select 120 respondents for the study. The analytical tools such as descriptive statistics, Foster-Greer-Thorbecke (FGT) poverty index, Tobit Regression Model, and budgetary analysis were used in analyzing the data. The results of the analysis of the socio-economic characteristics revealed that the majority (90% and 81.7%) of microcredit users and non-users of microcredit were male with mean age of 44years and 53 years respectively. The results of the Foster, Greer and Thorbecke (FGT) poverty index revealed that the poverty status of non-users of micro credit was greatly higher than that of the micro credit users as indicated by poverty incidence (P_0), poverty depth (P_1) and poverty severity (P_2) recorded for each categories of poultry egg producers. The results of the Tobit model indicated that variables such as gender, age, method of land acquisition and household size positively influenced the poverty status of microcredit users while gender, age, marital status, method of land acquisition and household size were variables that positively influenced the poverty status of non-users of microcredit among the poultry egg producers in the study area. This implies that for every unit increase in the aforementioned variables, there is a corresponding increase in the poverty incidence among the poultry egg producers. On the other hand, marital status, household income, education level, farming experience, number of birds, and system of management were variables that negatively influenced the poverty status of microcredit users while household income, education level, farming experience, number of birds, and system of management negatively influenced the poverty status of non-users of microcredit among the poultry egg producers in the study area. This implies that increase in the value of any of these variables will reduce the probability of being poor among poultry egg producers. Findings from the study showed that majority (80.0%) of microcredit users and 56.7% of non-users of microcredit were married. The results of the budgetary analysis revealed that the gross margin of microcredit users and non-users of microcredit were ₦14107.61 and ₦6064.24 respectively. The net farm income on the other hand for microcredit users and non-users were estimated as ₦13870.92 and ₦5962.04 respectively. The gross margin and net farm income were positive for both categories of poultry egg producers in the study area though they were higher for microcredit users. Rate of Return on Investment (RROI) estimated for microcredit users and non-users of microcredits showed that microcredit users and non-users of microcredits earn 78.43 kobo and 60.40 kobo respectively on every naira invested in poultry egg business in the study area. The study recommended that microcredit should be made available and accessible to poultry egg producers at a low interest rate to enhance expansion of their production, thereby generating more income leading to reduction in their intensity of poverty.
Keywords: Microcredit, Poverty, Profitability, Poultry Egg Producers, Bank of Agriculture, Nigeria

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I.   Introduction

Poverty is a problem that for decades has defied solution adduced for curbing it especially in developing countries. Poverty reduction has been a major concern for successive governments in Nigeria because it is believed to be the universally accepted way of achieving economic growth in the country. The intended purpose is to improve the standards of living of the people as well as their quality of life (Dosunmu and Ogunniyi, 2015). Regardless of myriads of anti-poverty programs by successive Nigerian government, majority of the population is enmeshed in the net of abject poverty due to faulty economic policies and unsustainable poverty alleviation programs of successive governments (Ejikeme, 2014). Micro-credit programs were among the programs introduced in an attempt to attenuate the intensity of poverty among the populace. Micro-credit has been reported as an effective and powerful tool for income generation, food security, human resource development and ultimately poverty alleviation (Muhammad, 2014). It seems to be one of the effective solutions to removing poverty of the people. It helps to improve people income and the standard of living. It can help people to establish their own business and decrease their poverty (Ahmad, 2014). Ayegba (2013) reported that farm credit plays a crucial role in agricultural and rural development as it enable farmers to reap economies of scale, venture into new technologies and empower them to provide utilities for a wider market.

Due to the importance of microcredit as a panacea for improving farm productivity and attenuating the intensity of poverty among beneficiaries, several works have been carried out on micro-credit and poverty reduction in Nigeria (Alex, 2012; Oluyole, 2012; Agbaeze, 2014; Ahmad, 2014; Dosunmu *et al.,* 2015; Falola *et al.,* 2015; Toluwase *et al.,* 2016). Toluwase *et al.,* (2016) reported that credit utilization influences farm productivity since credit-constrained farmers are more likely to use lower levels of inputs in production compared to those who are not. The use of credit has the capacity to facilitate optimal input use leading to a positive impact on productivity and hence, the poverty status of the farmers. However, Mathew *et al.,* (2013) argued that microcredit purveyed by microfinance institutions has not increased incomes, but has driven poor households into a debt trap, in some cases even leading to suicide. They add that the loans obtained are often used for durable consumer goods or consumption instead of being used for productive investments, that it has not improved health or education. Kathrin (2012) argued that microcredit has failed to increase incomes after interest payments, thereby contributing to poverty status of affected households.

Unfortunately, the previous studies have failed to examine the efficacy of microcredit purveyed by Bank of Agriculture in curbing the incessant menace of poverty among the beneficiaries. There is therefore a need to examine the effect of microcredit purveyed by Bank of Agriculture on poverty status of poultry egg producers in order to know the extent to which the microcredit has help in enhancing productivity, profitability as well as reducing poverty intensity of poultry egg producers in Oyo state, Nigeria. Thereby bridging this lacuna in knowledge. This study is expected to contribute to data base of knowledge on microcredit utilization. The outcome will be salutary to reveal whether the utilization of microcredit has positively influence the productivity, profitability and poverty status of the poultry egg producers in the study area. The outcome will be helpful in identifying main contributing factors to poverty status of the poultry egg producers in the study area. To policy makers, this work will serve as a guide towards appropriate policy formulation. Poverty reduction has been a major concern to Nigeria government. In line with the poverty reduction drive this research, if proven that microcredit purveyed by Bank of Agriculture can reduce poverty then, outcome of this study will offer policy makers an opportunity to redesign policies that will utilize microcredit to reduce the incidence of poverty in the country. The outcome will also be a guide to non-governmental organizations to prioritize support towards poverty reduction through microcredit utilization. Finally, the results of the study will serve as a reference material to students and researchers for future research in the area of microcredit utilization.

II. Review of Related Literature

There has been extensive empirical research examining the effects of microcredit on poverty reduction both in the context of developed and developing countries. Falola *et al.,* (2015) conducted a study on the comparative analysis of poverty status of users and non-users of micro credit in kwara state, Nigeria. Primary data were used for the study. Descriptive statistics was used to describe the socio-economic characteristics of the respondents. The determinants of poverty status of the farmers were analyzed using logistic model. The Foster-Greer-Thorbecke (FGT) model was used to analyze the extent of poverty among the farming households. The results show that majority of the users and non-users are married with 92% and 82% respectively. Majority (96%) of the users had some level of formal education while, majority (88%) of the non-users had no formal education. The FGT result shows that the poverty status of non-users is higher than that of the users. Agbaeze *et al.,* (2014) examined the impact of micro-credit on poverty alleviation in Nigeria: the case of Enugu east local council. In the study, primary data were collected on the sources and access to micro credit; the incidence, depth and severity of poverty among the selected rural households. The Foster-Greer-Thorbecke (FGT) (1984) model was used in analyzing the incidence, depth, and severity of poverty among the selected household. Logit regression model was used to determine the influence of independent variables (age, education, household size,

credit use, credit volume) on the dependent variable (poverty status). The results of the study show that poverty level is still high among the rural populace; but those that have access to micro-credit seems to have fared better than those who have no access to micro-credit. micro-credit depicts small loans for people who need money for self-employment project that generate income for urgent family needs such as, health problems and education

Haque (2012) carried out a study on Jagoroni Chacra Foundation (a leading micro-credit providing agency) to explore the conditions of rural poor often having micro-credit. The data presented in the articles shows how the micro-credit is effective to the rural poor to improve their income and other social economic conditions. The study claims that, 40.77 percent of the respondents monthly income was 3100-3500 taka before receiving loans and only 12.31 percent respondent monthly income was 4100-4500 taka. But after receiving credit their monthly income has been improved as 60.00 percent respondent income has increased to 4100-4500 taka per month. 16.92 percent respondent monthly income was below 3000 taka where this percentage is zero percent after joining the credit program. This study also claims, 53.85 percent of the respondents were house wife while only 35.38 percent remain as house wife after receiving loans. 30.77 percent of them were self-employed before receiving loans where the percentage increased to 46.18 was self-employed after receiving loads. After all, the study showed a tremendous success in the alleviation of poverty especially in rural area through micro-credit support to the rural poor.

Ferdoushi *et al.,* (2011) assessed the role of micro-credit programme in reducing poverty of rural women. The findings demonstrate that, the 'with credit' women have a much lower percentage of poverty in terms of its incidence (80%), intensity (28%) and severity (12%) compared to the 'without credit' respondents (99, 59 and 37% respectively). It was also found that educational attainment of the respondents and income earners in the family contribute positively to reduce poverty situation among the 'with credit' households more, as compared to 'without credit' households. Furthermore, the study suggests that, the more the income earners in a household, the higher the household income which ultimately contributes to a reduction of the household's poverty.

Saleem and Jan (2011) stressed the need to adopt new technology in the agriculture sector that requires credit. Cobb-Douglass linear regression was used on the data from 1990 to 2008. Credit used for seed, fertilizer, pesticides, irrigation and tractors were strongly related with the agriculture gross domestic product. Impact of credit on agriculture production was found to be more than 80%. Thereby it was concluded that credit access had a very significant role in increasing agriculture productivity. Oni *et al.,* (2011) explored the determinants of the efficiency of poultry farmers using micro credit in one of the states of Nigeria applying SFA technique on a sample of 115. Micro credit was found to have a positive and the significant impact on the technical efficiency.

Ayaz *et al.,* (2011) examined the efficiency scores of the different farmers in district Faisalabad using the Data Envelopment Analysis technique. Mean efficiency of the overall farmers was 0.78 or 22% inefficiency, efficiency scores were then regressed by different farm related variables through Tobit regression. Credit access was a significant positive factor to increase the efficiency score. Sumelius *et al.,* (2011) computed the profit efficiency of different rice farmers in Bangladesh. Cob-duglass stochastic profit function frontier analysis was carried out to find the profit efficiency and loss in profit using the data of 360 farms in the growing season of 2008 to 2009. It was found that the profit efficiency of the microfinance borrowers was 68 percent, whereas for the non-borrowers it was 52 percent. That showed significant improvement in the efficiency due to the borrowing.

Alex (2012) assessed the role of microfinance to reduce the poverty using both primary and the secondary data. Microfinance had a positive impact to alleviate poverty. Nudamatiya *et al.,* (2010) investigated the relationship between change in income and micro credit. Regression coefficient of 0.35 showed positive and significant relationship between microfinance and change in income. Akanni (2007) investigated the effect of microcredit on small scale Poultry business in South West Nigeria. Out of the total sample, 29% took loan from co-operative societies. Education level, business experience and number of birds in the farm were positive and significant. Funds intensity was highest for usage of inputs while it was lowest for the business experience.

Nghiem *et al.,* (2006) used data envelopment analysis to check the efficiency of 46 microcredit schemes that they surveyed in his research. They used poverty approach rather than production approach to see the efficiency of microcredit. Average technical efficiency score was recorded at 80% of the schemes. Age and the location of the schemes were found to have the significant impact on the efficiency of the microcredit using 2nd stage regression.

Trillo *et al.,* (2005) used Stochastic Frontier Production function approach to find the inefficiencies of different micro enterprises. Entrepreneurs who took loan from banks or through formal way were found to be more efficient than those who relied on their family members or friends etc. through informal way. One of the reasons behind was the screening policy by the banks.

III. Research Methodology

Study Area

The study was conducted in Oyo State, Nigeria. This area was considered most appropriate because of heavy concentration of the poultry production. Oyo State is one of the thirty-six states of the Federal Republic of Nigeria. Out of the 36 states in Nigeria Oyo state is one of the highest egg producers among the 36 states in Nigeria (Nigeria Bureau of Statistics, 2012). Oyo state has the second highest number of poultry holders in the country with approximately 407,547 chicken holders following Kogi state which has the highest number with 502,716 chicken holders in the country (Adedeji *et al.,* 2017).

Sampling Procedure and Sample Size

Multi-stage sampling procedure was used in the selection of the respondents for this study. The first stage involved the purposive selection of three (3) Local Government Areas (LGAs) that are prominent in poultry egg production. These are Ibadan South West, Akinyele and Ido. This was based on information provided by Oyo State Agricultural Development Programme. The second stage involved a random selection of three (3) communities from each LGA. The third stage was the stratification of the poultry egg producers into microcredit users and non-users of any microcredit services.The fourth stage involved the random selection of ten (10) microcredit users in each of the three selected communities in Ibadan South West LGA; six (6) microcredit users were randomly selected across the three communities in Akinyele LGA, while four (4) microcredit users were randomly selected across the three communities in Ido LGA. The selection however was based on proportionate to size of the beneficiaries (poultry egg farmers' borrowers) from the list obtained from the Bank of Agriculture microcredit services in the study area. This gives a total of 60 microcredit users in the study area.

In the stratum of non-users of any microcredit services however, 24 respondents were randomly selected across the three communities in Ibadan South West LGA, 18 non-users of any microcredit services were also selected across the communities in each of Akinyele and Ido LGA respectively by random sampling. This results to a total of sixty (60) non users of any microcredit services, giving a total of 120 respondents across the two groups. Table 1 presents the detail information on sampling procedure and sample size.

Table 1: Sampling Procedure and Sample Size

Local Government Areas	Communities			Microcredit Users	Non-Users of Microcredit
Ibadan South West	Adeoyo	Oluyole	Arapaja	30	24
Akinyele	Moniya	Ajibode	Ojoo	18	18
Ido	Apata	Omi-Adio	Apete	12	18
Total				**60**	**60**
Total Number of Respondents				**120**	

Sources of Data

Primary data were used for this study. A well-structured questionnaire was used to obtain relevant information from the respondents. The structured questionnaire was used to obtain data on socio-economic variables and other relevant information such as age, educational level, farm size, gender, household size, marital status, method of land acquisition, poultry egg farming experience and system of management.

Analytical Techniques

The following analytical techniques were employed in analyzing the data: descriptive statistics, Foster-Greer-Thorbecke (FGT) poverty index, Tobit Regression Model, budgetary analysis, and t-test.

Descriptive Statistics

Descriptive statistics such as frequency distributions, percentages and mean distribution was used to describe the socio-economic characteristics of respondents in the study area.

Construction of Poverty Line

Per capita expenditure approach which is considered more appropriate in past studies because it is consistent and does not change over a period of time when compared to income was adopted for construction of poverty line in this study (Adetayo, 2014). The poverty line is defined as the two-thirds (2/3) of the mean value of per capita consumption expenditure in the study area. The poultry egg producers were categorized into poor and non-poor group using the two-third mean per capita expenditure as the bench mark (Adetayo, 2014). Poultry

egg producers whose mean consumption expenditure falls below the poverty line are regarded as being poor while those with their expenditure above the bench mark are non-poor.

Per Capita Expenditure (PCE) $= \dfrac{Total\ consumption\ expenditure}{household\ size}$ (1)

Total Per Capita Households Expenditure $=$ *summation of* PCE (2)

Mean Per Capita Households
Expenditure (MPCHE) $= \dfrac{Total\ Per\ Capita\ Households\ Expenditure}{Total\ Number\ of\ Households}$ (3)

Poverty Line (PL) $= {}^{2}/_{3} \times$ MPCHE (4)

Foster, Greer and Thorbecke (FGT)

Foster, Greer and Thorbecke (1984) index was used to analyze the incidence, depth and severity of poverty of microcredit users and non-users of microcredit among the poultry egg producers in the study area and were based upon the existence of households which were classified according to income estimated.

The mathematical expression of FGT is stated as follows:

$$P_\alpha(y, z) = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{Z - Y_i}{Z}\right)^\alpha$$ (5)

where;

$\alpha =$ poverty aversion parameter (0, 1 or 2) reflecting social valuation of different degree of poverty. It takes on a value of 0 for poverty incidence, 1 for poverty depth, and 2 for severity of poverty.

n = total number of households in the population

q = number of poor households

Z = poverty line

$Y_i =$ household per capita expenditure

$\left(\frac{Z - Y_i}{Z}\right) =$ Proportionate shortfall in expenditure below the poverty line

α Takes on value 0, 1, and 2 to determine the type of poverty index

When $\alpha = 0$ in FGT, the expression reduces to

$$P_{0} = \left(\frac{q}{n}\right) = \frac{Number\ of\ poor\ household}{Total\ number\ of\ household\ in\ population}$$ (6)

This is called the Headcount Ratio (poverty incidence) describing the proportion of the population that falls below the poverty line.

When $\alpha = 1$ in FGT, the expression reduces to

$$P_1 = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{Z - Y_i}{Z}\right)^1$$ (7)

This is called the Poverty Gap (depth of poverty) which measure how far below the poverty line the household has fallen.

When $\alpha = 2$ in FGT, the expression becomes

$$P_2 = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{Z - Y_i}{Z}\right)^2$$ (8)

This is called Poverty Severity Index which measures the degree of poverty among the poor households. This index weighs the poverty of the poorest individual more heavily than those just slightly below the poverty line. It adds to the Poverty Gap ratio an element of unequal distribution of the poorest individual's income below the poverty line.

Tobit Regression Model

The Tobit regression, a hybrid of the discrete and continuous dependent variable was used to determine the impact of the explanatory variables on the intensity of poverty.

The model is expressed according to Benjamin, (2012)

$y_i = Y_i{}^* = X_i\beta + e_i$ (9)

$y_i = 0$ if $Y_i{}^* \leq 0$ (i.e. $Z < I$)

$y_i = Y_i{}^*$ if $Y_i{}^* > 0$ (i.e. $Z > I$)

i = 1, 2------------------ n

Where,

y_i is the limited dependent variable. It is discrete, when the households are not poor and continuous, when they are poor.

$Y_i{}^*$ is the poverty depth / intensity defined as $[(Z - I_i)/Z]$

Z is the poverty line,

I_i is the per capita expenditure,

X_i is a vector of explanatory variables,

β is a vector of unknown coefficients and

e_i is an independently distributed error term.

The explanatory variables specified as determinants of poverty were:

X_1 = Age (years),

X_2 = Education (measured as years of formal schooling)

X_3 = Gender (1=male, 0 female)

X_4 = Household size (numbers)

X_5 = Household income (₦),

X_6 = Marital status (1=married, 0 otherwise)

X_7 = Method of land acquisition (1= purchased, 0 otherwise)

X_8 = Farm size (Number of birds)

X_9 = Poultry egg farming experience (years)

X_{10} = System of management (1=battery cage, 0 otherwise)

X_{11} = Access to microcredit (1= yes, 0 otherwise)

Budgetary Analysis

Profit made by users and non- users of microcredit among poultry egg producers in the study area was computed using the budgetary analysis. Budgetary analysis enables the estimation of the total costs as well as returns within a production period. The mathematical notation for calculating the gross margin is shown in the equation below according to Adedeji *et al.,* (2017):

$$GM = p_i y_i - r_i c_i \tag{10}$$

GM= Total Revenue (TR) − Total Variable Cost (TVC)

Where GM = Gross Margin (Naira)

$p_i y_i$ = Total Revenue (₦), $r_i c_i$ = Total Variable Cost (TVC), p_i=Price of table eggs per crate (₦), y_i=Quantity of eggs sold (crate), r_i=Unit price of each variable input used (₦),

c_i =Quantity of each variable input used.

$$\text{Total Variable Cost (TVC)} = x_1+x_2+x_3+x_4+x_5+x_6+x_7+x_8 \tag{11}$$

x_1= Cost of birds (₦), x_2= Cost of medication (₦), x_3= Cost of feed (₦),

x_4 = Cost of fuel (₦), x_5= Cost of labor (₦), x_6= Cost of electricity (₦), x_7= Cost of transportation (₦), x_8= Cost of rent (land) (₦)

The net farm income is derived as follows:

$$\pi = GM - TFC \tag{12}$$

Where: π = Net Farm Income (₦) per poultry egg producers

GM = Gross margin (₦) per poultry egg producers

TFC = Total Fixed Cost

The Rate of Return on Investment (RROI) was used to determine and compared the measure of financial outcomes of microcredit users and non-users of microcredit among poultry egg producers in the study area. This was calculated using the formula below:

$$RROI = \frac{\text{Net Farm Income}}{\text{Total cost}} \times 100 \tag{13}$$

The t-test which is a test of difference of two means was used to test the significant difference between the net farm income of microcredit users and non-users of microcredit among poultry egg producers in the study area

$$t = \frac{\overline{x_1} - \overline{x_2}}{\sqrt{\frac{\sigma^2_1}{n_1} + \frac{\sigma^2_2}{n_2}}} \tag{14}$$

$\overline{x_1}$= Mean net farm income of microcredit users.

$\overline{x_2}$= Mean net farm income of non users of microcredit.

σ^2_1 = Variance of net farm income of microcredit users.

σ^2_2 = Variance of net farm income of non users of microcredit.

n_1 = number of microcredit users sampled

n_2 = number of non users of microcredit sampled

The Rule of thumb is to reject the null hypothesis (Ho) if T calculated is greater than T tabulated and fail to reject if otherwise.

IV. Results And Discussion

Socioeconomic characteristics of respondents

The socio-economic characteristics discussed were: age, educational level, farm size, gender, household size, marital status, method of land acquisition, poultry egg farming experience and system of management.

Age of Respondents

The distribution of respondents by age is as shown in Table 2. The results revealed that 41.3% of microcredit users were between 41 and 50 years while that of non-users of microcredit 41.3% were between 51 and 60 years. This implies that microcredit users were relatively younger than non-users of microcredit. The mean age of microcredit users was 44years which indicated that they were still in their active years therefore the stress and rigors of poultry egg production do not seem to be a hindrance to their involvement in poultry egg production because of their agility and strength. This finding agrees with the findings of Adedeji *et al.,* (2017) who reported an average age of 42 years for poultry egg producers in Oyo state. The results is in accordance with Olayemi (2004) who stated that for farmers to be productive in farm activities, they must be young and active so as to contribute meaningful labour input into all the stages of production for efficient output realization which in turn results in consumptive and income opportunities with proportional household welfare. The mean age of non-users of microcredit was 53years which implies that majority of the respondents were getting older and this might decline productivity as well as a threat to poultry egg production viz-a-viz impoverish the poultry egg producers' households.

Educational Level of Respondents

From Table 3, University education was found to be the highest level of education among microcredit users (35.0%) while HND was found to be the highest level of education among non-users of microcredit users (38.3%). Lower proportion of microcredit users (6.7%) had secondary education compared with 18.3% of non-users of microcredit users. The implication of this is that with the higher degree of literacy among microcredit users, they may likely better appreciate extension information and be more readily and willing to adopt microcredit utilization in poultry egg production. The high level of education is expected to positively influence the productivity as well as the efficiency of the farms due to some of the managerial as well as technical decisions that may be required at some point in the production process. This high level of education of the poultry egg producers could be due to the fact that success and efficiency in poultry egg production like any other livestock production enterprise require some level of educational attainment by the farmer. The assertion above is premised on the fact that innovations on efficient production and management methods are constantly evolving to meet the challenges of the poultry enterprise. The years of education of the farm proprietor is thus expected to influence the productivity and efficiency or inefficiency of the farm unit.

Farm Size of Respondents

Farm size was classified following Adene and Oguntade (2006), Arowolo *et al.,* (2012) and Akintunde *et al.,* (2015). Farms having between 500 and 2000 birds were considered as small scale commercial farms, those farms having more than 2000 birds and flock size which is less than 10000 birds were regarded as a medium commercial farm while those having 10000 birds and above were classified as large commercial poultry farms. The result in Table 4 showed that the majority (81.7%) of microcredit users operated on medium scale with 2590 birds as an average number of birds while 53.3% of non-users of microcredit operated on small scale 1250 birds as an average number of birds. The relatively higher proportion of microcredit users being medium scale farmers as compared to non-users of microcredit being small scale farmers may be due to availability of microcredit which contributes immensely to the expansion of poultry egg production business among the microcredit users in the study area.

Gender of Respondents

Table 5 shows the distribution of the respondents according to gender; it revealed that 90% of the microcredit users were male and 10% of them were female while 81.7% of non-users of microcredit were male and 18.3% of them were female. The involvement of more males than females in poultry egg production may be due the stress and rigor which characterizes the poultry egg production business which not many females might be able to cope with. This corroborates the findings of Adedeji *et al.,* (2017) who reported a heavy participation of males in poultry egg production business in Oyo state.

Household Size of Respondents

The result in Table 6 indicated that the mean household size for microcredit users was 6 persons per house and 76.7% the respondents fell between 6 and 10 persons per house. The mean household size for non-users of microcredit was 8 persons per house and 45.1% of the respondents fell between 11 and 15 persons per house. The result of this study indicated that there may be availability of family labor for poultry egg operations in the study area and this could minimize the cost that could have been incurred on in hiring labour. This implies that the family might be used as cheap sources of labour for the poultry farms. Household size has been seen as one of the major determinants of poverty that is positive to being poor in this part of the world (Falola *et al.,* 2015). Large family sizes might be a drain for business profit, as household expenditure, particularly on

consumption, is high. This basically explains why most small scale farms close down when they could no longer provide the required funds for their smooth operation.

Marital Status of Respondents

Table 7 reveals that majority (80.0%) of microcredit users and 56.7% of non-users of microcredit were married. The marital status of a farm proprietor has an implication for the household size and invariably the amount of family labour that may be available. The fact that majority of the poultry egg producers were married is an indication that most of them were mature and responsible to cater for their households as well as have clear knowledge of their wellbeing. The fact that majority of the respondents were married could also be an indication of the availability of family labor for the enterprise. This finding is in accordance with the findings of Adedeji *et al.,* (2017) who reported that poultry egg production in Oyo state is dominated by married men.

Method of Land Acquisition by Respondents

The result in Table 8 shows that majority (88.3%) of microcredit users acquired land by purchase while 55.0% of non-users of microcredit acquired land by lease or rent. The acquisition of land through purchase by microcredit users is an indication of availability of enough capital to kick starts the poultry egg production business in the study area. The acquisition of land via rent or lease by majority of non-users of microcredit in the study area showed that they have little capital to invest in poultry egg production business. Purchasing of land and construction of pen by non-users of microcredit could reduce the amount that would have been incurred in procurement of laying birds. However, the annual cost of rent could increase overhead expenses of non-users of microcredit leading to reduction in profit which could increase the intensity of poverty among them most especially when the percentage hen day production has drastically reduced beyond a profitable level.

Poultry Egg Farming Experience of Respondents

The result in Table 9 indicated that 15.0% of microcredit users had poultry egg farming experience of more than 10 years with 9 years as the average years of experience in poultry egg production while non-users of microcredit with more than 10 years of experience in poultry egg production were 5% of the respondents with 7 years as the average years of experience in poultry egg production. Also, a proportion of 58.3 % of microcredit users had 6 to 10 years of experience in poultry egg production, while the proportions of non-users of microcredit with 6 to 10 years of experience in poultry egg production were 43.3%. Expectedly, the more the numbers of years of experience in poultry farming, the better the ability to manage the poultry business well. Cases of incidence of diseases, fire outbreaks, poor feed quality and pilferage should be better handled by experienced poultry farmers (Akanni, 2007). With better handling of production resources in poultry, there should be a higher level of production in the industry. This will ultimately translate to increased income level for the poultry egg producers. The findings revealed that more microcredit users in the study area had some higher level of experience in poultry egg production compared with non-users of microcredit.

System of Management of Respondents

The result shown in Table 10 indicated that 68.3% of microcredit users utilized battery cage system while lesser number (30.0%) of the farmers reared their birds on deep litter system. 61.7% of non-users of microcredit utilized deep liter system of management in poultry egg production in the study area while few (30.0%) of the farmers reared their birds on battery cage system. The utilization of battery cage system in poultry egg production has been reported to be more efficient and profitable under various scale of operation compared to deep liter system (Aladejebi *et al.,* 2014). This could be one of the reasons for choosing it over deep liter system. The use of battery cage system among microcredit users may be as a result of access to microcredit since battery cage is expensive.

Table 2: Distribution of Respondents by Age

Age (Years)	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
21-30	4	6.7	12	20.1	13.4
31-40	6	10.1	10	16.9	13.5
41-50	25	41.3	12	20.1	30.7
51-60	20	33.4	25	41.3	37.35
> 60	5	8.5	1	1.7	5.1
Total	**60**	**100.0**	**60**	**100.0**	**100.0**
Mean	**44**		**53**		

Source: Computed from Field Survey Data, 2019

Table 3: Distribution of Respondents by Level of Education

Level of education	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
No formal education	-	-	2	3.3	3.3
Primary education	-	-	5	8.3	8.3
Secondary education	4	6.7	11	18.3	12.5
University	21	35.0	6	10.0	22.5
HND	17	28.3	23	38.3	33.3
OND	13	21.7	10	16.7	19.2
NCE	5	8.3	3	5	6.65
Total	**60**	**100.0**	**60**	**100.0**	**100.0**

Source: Computed from Field Survey Data, 2019

Table 4: Distribution of Respondents by Farm Size (Number of birds)

Farm size (Number of birds)	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
500-2000	6	10.0	32	53.3	31.6
2001-9999	49	81.7	25	41.7	61.7
> 10000	5	8.3	3	5.0	6.7
Total	**60**	**100.0**	**60**	**100.0**	**100.0**
Mean	**2590**			**1250**	

Source: Computed from Field Survey Data, 2019

Table 5: Distribution of Respondents by Gender

Gender	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
Male	54	90.0	49	81.7	85.8
Female	6	10.0	11	18.3	14.2
Total	**60**	**100.0**	**60**	**100.0**	**100.0**

Source: Computed from Field Survey Data, 2019

Table 6: Distribution of Respondents by Household Size

Household Size	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
1-5	13	21.7	14	23.3	22.5
6-10	47	76.7	19	31.6	54.1
11-15	1	1.7	27	45.1	23.4
Total	**60**	**100.0**	**60**	**100.0**	**100.0**
Mean	**6**		**8**		

Source: Computed from Field Survey Data, 2019

Table 7: Distribution of Respondents by Marital Status

Marital status	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
Single	12	20.0	26	43.3	31.6
Married	48	80.0	34	56.7	68.4
Total	**60**	**100.0**	**60**	**100.0**	**100.0**

Source: Computed from Field Survey Data, 2019

Table 8: Distribution of Respondents by Method of Land Acquisition

Method of Land Acquisition	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
Purchased	53	88.3	15	25.0	56.6
Rent or Lease	4	6.7	33	55.0	30.9

Inheritance	3	5.0	12	20.0	12.5
Total	**60**	**100.0**	**60**	**100.0**	**100.0**

Source: Computed from Field Survey Data, 2019

Table 9: Distribution of Respondents by Poultry Egg Farming Experience

Poultry Egg Farming Experience (Years)	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
1-5	16	26.7	31	51.7	39.2
6-10	35	58.3	26	43.3	50.8
> 10	9	15.0	3	5.0	10.0
Total	**60**	**100.0**	**60**	**100.0**	**100.0**
Mean	**9**		**7**		

Source: Computed from Field Survey Data, 2019

Table 10: Distribution of Respondents by System of Management

System of Management	Microcredit Users		Non Users of Microcredit		Pooled Data
	Frequency	Percentage	Frequency	Percentage	Percentage
Battery cage	41	68.3	23	38	53.1
Deep litre	18	30.0	37	61.7	45.9
Both	1	17.0	-	-	1.0
Total	**60**	**100.0**	**60**	**100.0**	**100.0**

Source: Computed from Field Survey Data, 2019

Estimation of Poverty Indices of Microcredit Users and Non Users among Poultry Egg Producers

Foster, Greer and Thorbecke (FGT) poverty index was used to estimate the incidence, depth and severity of poverty of microcredit users and non-users among poultry egg producers in the study area. The poverty aversion parameters employed were poverty incidence (P_0), poverty depth (P_1) and poverty severity (P_2). The study adopted the per capita consumption expenditure approach in the determination of poverty line. The poverty line was estimated as the two-thirds (2/3) of the mean per capita consumption expenditure of poultry egg producers in the study area. The mean per capita consumption expenditure of poultry egg producers as well as the poverty line was estimated to be ₦ 16478.09 and ₦ 10985.39 respectively. Poultry egg producers whose per capita consumption expenditure fell below the poverty line were regarded as being poor while those with their per capita consumption expenditure above the bench mark were non-poor.

From the result in Table 11, it could be seen that microcredit users among poultry egg producers had higher total expenditure (food and non-food). More so, the per capita expenditure was estimated for both categories of poultry egg producers. This was derived by dividing the total expenditure of poultry egg producer's households by their total household size. Per capita expenditure incurred by microcredit users was higher than that of non-users of microcredit. The per capita expenditure estimated for users and non-users of microcredit were ₦19,721.4 and ₦13,234.78 per month respectively. This translates into an average of ₦636.17 and ₦426.93 per day for user and non-users of microcredit among poultry egg producers respectively. The poverty incidence (P_0) showed that among the micro credit users, 12% of the sample was poor while among the non-users of micro credit 18% of the sample was poor.

The poverty depth (P_1) of the users and non-users were 0.21 and 0.37 respectively. This implies that their per capita consumption expenditure would need to be increased by 21% and 37% respectively for them to come out of poverty and become non-poor. The micro credit users and non-users would require 21% (₦2,306.93) and 37% (₦4,064.59) of the poverty line to get out of poverty respectively. The poverty severity (P_2) measures the distance of each poor individual to another. Among the users the distance is 0.37 while in the non-users the distance is 0.77. These values denote that severity of poverty was greatly higher among non-users of micro credit (77%) than in micro credit users (37%). A comparison of the poverty status of the users and non-users of micro credit among poultry egg producers revealed that the poverty status of non-users of micro credit is greatly higher than that of the micro credit users.

Table 11: Poverty Indices of Poultry Egg Producers in the Study Area

Parameters	Microcredit Users	Non Users of Microcredit
Expenditure (₦/month)		
Total food expenditure	32450.2	29950.65
Total non-food expenditure	21031.5	19538.23
Total expenditure	53481.7	49488.88
Per Capita Expenditure	19721.4	13234.78
Per Capita Expenditure per day	636.17	426.93
Incidence of poverty (P_0)	0.12	0.18
Poverty depth (P_1)	0.21	0.37
Poverty severity index (P_2)	0.37	0.77
Poverty line	₦ 10985.39	
Mean per capita consumption expenditure	₦ 16478.09	

Source: Computed from Field Survey Data, 2019

Analysis of Poverty Status of Poultry Egg Producers according to Socioeconomic Characteristics

Having obtained the poverty indices of poultry egg producers, the various poverty indicators were further considered with respect to socioeconomic characteristics such as age, educational level, farm size (number of birds), gender, household size, marital status, method of land acquisition, poultry egg farming experience and system of management. According to Table 12, Older household heads among microcredit users and non-users was found to have a high intensity of poverty of (39%) and (51%) respectively. The intensity of poverty was also found to be higher for microcredit users with lower level of education.

Poverty intensity was 31% for microcredit users with secondary education and 9% for microcredit users with NCE respectively. Intensity of poverty was found to be higher for non-users of microcredit with no formal education (30%), intensity of poverty was also found to be high for non-users of microcredit with primary education (23%), secondary education (37%) and NCE (13%).

Microcredit users and non-users that reared 500 to 2000 laying birds were found to have higher intensity of poverty of 46% and 62% respectively. Microcredit users and non-users that reared more than 10000 laying birds have lower intensity of poverty of 3% and 5% respectively. Poverty intensity was found to be higher among male microcredit users (18%) relative to female microcredit users (3%). Poverty intensity was also found to be higher among male non users of microcredit (43%) relative to female non users of microcredit (4%). The intensity of poverty was higher among male non users of microcredit (43%) compared to male microcredit users (18%). This result corroborates the finding of Adetayo, (2014) who reported higher poverty intensity for male headed farming households. Microcredit users with higher household size of 11 to 15 members tends to have higher intensity of poverty (13%) relative those with lower household size of 1 to 5 members (10%).

Non-users of microcredit with higher household size of 11 to 15 members also have higher intensity of poverty (52%) relative those with lower household size of 1 to 5 members (14%). With higher household size, there will be higher expenditure to meet household needs and hence, the higher the intensity of poverty most especially in a household with reduced level of income.

Those that were married (20%) among microcredit users tends to have higher intensity of poverty than those that were singles (2%). Poverty intensity was also found to be higher among non-users of microcredit that were married (43%) relative to non-users of microcredit that were single (8%). This result shows that poverty intensity was higher among non-users of microcredit that were married (43%) compared to microcredit users that were married (20%) among the poultry egg producers. Microcredit users and non-users that utilized rent/lease as their method of land acquisition were characterized by poverty intensity of 42% and 77% respectively.

Microcredit users and non-users with more than 10 years of poultry egg farming experience were characterized with low intensity of poverty while microcredit users and non-users with poultry egg farming experience between 1 to 5 years were found to have high poverty intensity of 43% and 62% respectively. Microcredit users and non-users that utilized deep liter as their system of poultry management were found to have higher intensity of poverty of 36% and 51% respectively.

Table 12: Incidence (P_0), Intensity (P_1) and Severity (P_2) of Poverty according to socio-economic Characteristics of Respondents

Variable	Microcredit Users			Non Users of Microcredit		
Age	P_0	P_1	P_2	P_0	P_1	P_2
21-30	0.25	0.11	0.05	0.33	0.36	0.40
31-40	0.17	0.08	0.04	0.20	0.21	0.12
41-50	0.04	0.02	0.01	0.27	0.26	0.25
51-60	0.10	0.07	0.05	0.13	0.11	0.10

	P_0	P_1	P_2	P_0	P_1	P_2
> 60	0.40	0.39	0.38	0.67	0.51	0.39
Education	P_0	P_1	P_2	P_0	P_1	P_2
No formal Education	-	-	-	0.67	0.30	0.14
Primary	-	-	-	0.5	0.23	0.10
Secondary	0.5	0.31	0.19	0.45	0.37	0.30
University	0.09	0.06	0.04	0.17	0.07	0.03
HND	0.06	0.03	0.01	0.09	0.04	0.02
OND	0.08	0.04	0.02	0.1	0.035	0.01
NCE	0.2	0.09	0.04	0.33	0.12	0.04
Farm size (Number of birds)	P_0	P_1	P_2	P_0	P_1	P_2
500-2000	0.34	0.46	0.61	0.67	0.62	0.58
2001-9999	0.20	0.10	0.02	0.33	0.14	0.06
>10000	0.04	0.03	0.05	0.08	0.05	0.03
Gender	P_0	P_1	P_2	P_0	P_1	P_2
Male	0.15	0.18	0.23	0.27	0.43	0.67
Female	0.05	0.03	0.01	0.09	0.04	0.02
Household size	P_0	P_1	P_2	P_0	P_1	P_2
1-5	0.09	0.10	0.09	0.11	0.14	0.09
6-10	0.18	0.08	0.07	0.21	0.07	0.04
11-15	0.2	0.13	0.05	0.33	0.52	0.83
Marital status	P_0	P_1	P_2	P_0	P_1	P_2
Single	0.08	0.02	0.002	0.12	0.08	0.05
Married	0.13	0.20	0.321	0.32	0.43	0.58
Method of land Acquisition	P_0	P_1	P_2	P_0	P_1	P_2
Purchased	0.08	0.05	0.04	0.06	0.02	0.01
Rent/lease	0.36	0.42	0.60	0.5	0.77	0.90
Inheritance	0.03	0.08	0.07	0.33	0.15	0.09
Poultry egg farming experience	P_0	P_1	P_2	P_0	P_1	P_2
1-5	0.31	0.43	0.59	0.39	0.62	0.97
6-10	0.11	0.02	0.01	0.04	0.14	0.01
> 10	0.03	0.05	0.02	0.33	0.013	0.06
System of management	P_0	P_1	P_2	P_0	P_1	P_2
Battery cage	0.05	0.02	0.01	0.09	0.06	0.04
Deep liter	0.26	0.36	0.50	0.32	0.51	0.80

Source: Computed from Field Survey Data, 2019

Determinants of Poverty Intensity among Poultry Egg Producers

Table 13 shows the determinant of poverty intensity among the poultry egg producers in the study area. The likelihood ratio chi-square of 73.07 obtained in the study for poultry egg producers implies that the parameters included in the Tobit model are significantly different from zero at the 1 per cent level of significant. The log likelihood function of the model was -62.69 which indicated the goodness of fit and strong explanatory power of the model. The results of the Tobit model indicated that access to microcredit, age, educational level, farm size (number of birds), household size, household income, method of land acquisition and poultry egg farming experience significantly influenced the poverty status of the poultry egg producers.

At 1% level of significance, the coefficient of access to microcredit had negative and significant influence on poultry egg producers. The negative coefficient of -0.0884406 implies that the intensity of poverty is reduced among poultry egg producers that had access to microcredit, relative to non-users of microcredit. This supports the finding of Falola *et al.,* (2015) where access to credit leads to reduction in poverty status of farmers.

At 10% level of significance, the coefficient of age of poultry egg producers in the study area had positive and significant influence on their poverty status. The positive coefficient of 0.0177762 implies that a unit increase in age will increase the intensity of poverty of the poultry egg producers in the study area. The poultry egg producers become poorer as they are getting older. This can be justified based on the fact that an increase in age could result in decline in strength and productivity (Falola *et al.,* 2015).

Educational status of poultry egg producers had negative coefficient of -0.0260546 and statistically significant at 5% level of significance. This implies that a unit increase in the level of educational attainment of the poultry egg producers will reduce their intensity of poverty. This corroborates the finding of Ekanem *et al.,* (2015) where level of education significantly affects the poverty status of broiler farmers.

Farm size (number of birds) of poultry egg producers had a negative coefficient of -0.0000791 and significantly influenced their poverty status at 5% level of significance, which implies that as the number of birds increase, the intensity of poverty also decreases. This is because as the number of birds increases provided all other variables of production such as capital, labor and access to information are made adequate then output would increase resulting in increase in income and reduction in poverty intensity. This assertion is in accordance with that of Ekanem *et al.,* (2015) where the number of birds kept significantly affects the poverty status of broiler farmers. The finding in this study shows that increase in farm size (number of birds) usually translates into higher income and lower intensity of poverty, all things being equal.

Household size of poultry egg producers had a positive coefficient of 0.0105256 and statistically significant at 1 % level of significance. This implies that a unit increase in the household size of poultry egg producers would increase their intensity of poverty. This is because more individuals would be competing for the few available resources. Household size increases the intensity of poverty because increase in household size could directly reduce income per-head (per-capita income) as well as impair standard of living of the households (Asad, 2007; Falola *et al.,* 2015).

At 5% level of significance, the coefficient of household income had negative and significant influence on poverty status of poultry egg producers. The negative coefficient of -7.34×10^{-6} implies that for every naira increase in household income there would be a reduction in poverty intensity of the poultry egg producers. This is so since an increase in household income increases household ability to consume and invest in non-farming ventures so as to generate additional income for the family. At 10% level of significance, the coefficient of method of land acquisition used by poultry egg producers had a positive and significant influence on their poverty status. The positive coefficient of 0.0239482 implies that poverty intensity is increased among the poultry egg producers irrespective of their method of land acquisition either via purchase, rent (lease) or inheritance.

The coefficient of poultry egg farming experience of poultry egg producers had a negative and significant effect on their poverty status. The negative coefficient of -0.0061842 implies that a unit increase in poultry egg farming experience will reduce the poverty intensity of the poultry egg producers. The results of this study indicates that poultry egg farming experience has a significant influence on poultry egg production and in the prediction of the poverty status of poultry egg producers in the study area.

Table 13: Determinants of Poverty Intensity among Poultry Egg Producers

Variables	Coefficient	Z-Value	Std. Err.
Constant	2.5562967	1.73	1.477628
Access to microcredit	-0.0884406	-3.23***	0.027380
Age	0.0177762	1.91*	0.009306
Education	-0.0260546	-2.78**	0.009372
Farm size (Number of birds)	-0.0000791	-2.06**	3.839×10^{-5}
Gender	0.3091323	1.34	0.234191
Household size	0.0105256	3.02***	0.003485
Household income	-7.34×10^{-6}	-2.67**	2.749×10^{-6}
Marital status	0.1040589	1.45	0.071764
Method of land acquisition	0.0239482	1.77*	0.013530
Poultry egg farming experience	-0.0061842	-1.98*	0.003123
System of management	-0.2682801	-1.56	0.171974
Number of observation	120		
Log likelihood	-62.69		
LR chi2(10)	73.07		
Pseudo R^2	0.8827		
Prob > chi2	0.0001		

Source: Computed from Field Survey Data, 2019
*** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Elasticity of Intensity of Poverty among Poultry Egg Producers

Table 14 presents the result of the elasticity of intensity of poverty that was computed for only six of the variables included in the model because other variables with statistically significant coefficients were dummies. Elasticity coefficient of intensity of poverty of users and non-users of microcredit was computed for age, level of education, household size, household income, farm size (number of birds), and poultry egg farming experience. The important factors that reduced poverty intensity among the respondents were level of education, household income, farm size (number of birds), and poultry egg farming experience.

The result showed that out of the six computed elasticity coefficients, only the coefficients of education and household income with values greater than one were elastic for microcredit users. This implies that a proportionate change in these variables would lead to a more than proportionate change in the intensity of poverty of microcredit users. The result also indicated that out of the six computed elasticity coefficients, only the coefficients of household size with value greater than one was elastic for non-users of microcredit. This implies that a proportionate change in this variable would lead to a more than proportionate change in the intensity of household poverty.

Educational status of microcredit users and non-users had elasticity coefficients of 1.1341(elastic) and 0.6408 (inelastic) respectively. This implies that 1% unit increase in the level of educational attainment of microcredit users and non-users will reduce their intensity of poverty by 1.13% and 0.64% respectively. The elastic nature of elasticity coefficients of educational status of microcredit users revealed that increase in educational attainment contributes immensely to reduction of intensity of poverty among the microcredit users compared with non-users of microcredit.

The responsiveness of the intensity of poverty among microcredit users and non-users to a rise in household income were 1.7912 (elastic) and 0.9718 (inelastic) respectively. This indicated that 1% unit increase in household income would reduce the intensity of poverty of microcredit users by 1.79% while the intensity of poverty of non-users of microcredit would be reduced by 0.97% due to 1% unit increase in household income. Farm size (number of birds) of microcredit users and non-users had elasticity coefficients of 0.321 and 0.1595 respectively and were inelastic. This means that 1% unit increase in number of birds raised by microcredit users and non-users had a less than proportionate effect on poverty intensity among the poultry egg producers. 1% unit increase in number of birds raised by microcredit users slightly reduced their intensity of poverty by 0.32% compared with 0.16% reduction in poverty intensity among the non-users of microcredit.

Poultry egg farming experience of microcredit users and non-users of microcredit had elasticity coefficients of 0.2458 and 0.123 respectively and were inelastic. This implies that 1% unit increase in poultry egg farming experience of microcredit users and non-users had a less than proportionate effect on poverty intensity among the poultry egg producers. 1% unit increase in number of birds raised by microcredit users slightly reduced their intensity of poverty by 0.25% compared with 0.12% reduction in poverty intensity among the non-users of microcredit. However, some variables such as age and household size were found to increase poverty intensity of users and non-users of microcredit.

The elasticity coefficients of the poverty intensity due to an increase in age of microcredit users and non-users were 0.465 and 0.6369 respectively. Both elasticity coefficients showed that they were inelastic to increase in age, meaning that 1% unit increase in age of microcredit users and non-users had a less than proportionate effect on poverty intensity among the poultry egg producers. 1% unit increase in age of microcredit users slightly increases their intensity of poverty by 0.465% relative to 0.64% reduction in poverty intensity among the non-users of microcredit. The elasticity coefficients of poverty intensity with respect to household size of microcredit users and non-users were 0.7422 and 1.324 respectively. This implies that 1% unit increase in household size of microcredit users will slightly increases their intensity of poverty by 0.7422 % but reverse was the case of non-users of microcredit where 1% unit increase in household size raised their poverty intensity by 1.32%

Table 14: Elasticity of Intensity of Poverty among Poultry Egg Producers

Variable	Microcredit users	Non-users of microcredit	Pooled Data
Age	0.465	0.6369	0.934
Education	-1.1341	-0.6408	-1.879
Farm size (Number of birds)	-0.321	-0.1595	-1.563
Household size	0.7422	1.324	2.8762
Household income	-1.7912	-0.9718	-2.435
Poultry egg farming experience	-0.2458	-0.123	-1.792

Source: Computed from Field Survey Data, 2019

Costs and Returns Structure per Production Period for Microcredit Users and Non Users among Poultry Egg Producers

Table 15 shows the costs and returns in Naira per production period for microcredit users and non-users among poultry egg producers in the study area. The total variable cost for microcredit users and non-users were ₦17447.96 and ₦9769.13 respectively. The cost of feeding accounted for the highest proportion of the total variable cost in both categories of poultry egg producers. The cost incurred on feeding by microcredit users and non-users accounted for 66.46% and 59.52% of the total variable cost of production respectively. This corroborates the findings of Ashagidigbi *et al.,* (2011) and Aladejebi *et al.,* (2014) who asserted that the cost of feeding laying birds accounted for over 70 percent of the total cost of production. The total fixed costs for both microcredit users and non-users were estimated to be ₦236.69 and ₦102.2 respectively. The revenue from poultry eggs for both microcredit users and non-users were ₦22222.22 and ₦11333.34 respectively and accounted for the highest proportion of the total revenue from the poultry egg production business.

This supports the findings of Aladejebi *et al.,* (2014) and Adedeji *et al.,* (2017) who stated that the revenue from poultry eggs accounted for the highest proportion of the total revenue from poultry egg production. The total revenue for both microcredit users and non-users among poultry egg producers were ₦ 31555.57 and ₦15833.37 respectively.

The gross margin of microcredit users and non-users of microcredit were estimated as ₦14107.61 and ₦6064.24 respectively. The net farm income on the other hand for microcredit users and non-users were estimated as ₦13870.92 and ₦5962.04 respectively. The gross margin and net farm income were positive for both categories of poultry egg producers in the study area though they were higher for microcredit users.

Rate of Return on Investment (RROI) was the profitability indicator estimated for the two categories of poultry egg producers. RROI estimated for microcredit users and non-users were 78.43% and 60.40% respectively. These showed that microcredit users and non-users earn 78.43 kobo and 60.40 kobo respectively

on every one naira invested in poultry egg business in the study area. This agrees with the findings of Aladejebi *et al.,* (2014) and Adedeji *et al.,* (2017) who stated that returns on investment account for the profit that accrue to the farmer on each naira invested on production.

Table 15: Costs and Returns Structure per Production Period for Microcredit Users and Non Users among poultry egg producers

Variables	Microcredit Users	Non Users of Microcredit
(A)Variable Cost	Mean Value (₦)	Mean Value (₦)
Cost of birds	4938.89	3125
Cost of medication	166.38	111.25
Cost of feed	11595.83	6038.33
Cost of fuel	226.83	156.67
Cost of labor	333.61	241.67
Cost of electricity	41.67	17.5
Cost of transportation	61.67	37.00
Cost of rent age (land)	83.08	41.71
Total Variable Cost (TVC)	**17447.96**	**9769.13**
(B) Fixed Cost (Depreciated cost)		
Cost of land	37.40	15.91
Cost of battery cage	64.31	16.81
Cost of poultry house/pen	104.41	51.79
Cost of drinkers	1.98	2.97
Cost of feeders	2.91	3.21
Cost of generator	9.37	4.05
Cost of borehole/deep well	16.31	7.46
Total Fixed Cost (TFC)	**236.69**	**102.2**
Total Cost	**17684.65**	**9871.33**
REVENUE		
Revenue from Eggs	22222.22	11333.34
Revenue from spent layers	8750.01	4250.02
Revenue from poultry droppings	583.34	250.01
TOTAL REVENUE	**31555.57**	**15833.37**
Gross margin	14107.61	6064.24
Net farm income	13870.92	5962.04
RROI	78.43	60.40

Source: Computed from Field Survey Data, 2019

Hypothesis Testing for Difference in Net Farm Income between Microcredit Users and Non Users among Poultry Egg Producers

The test of difference in net farm income between microcredit users and non-users among poultry egg producers was achieved using t-statistics with the result presented in Table 16. It was based on the hypothesis that there is no significant difference between the net farm income of microcredit users and non-users among the poultry egg producers in the study area. The result of the t-test showed that there is significant difference ($P<0.05$) between the net farm income of the two categories of poultry egg producers. This revealed that microcredit users have the capacity to produce more returns than non-users of microcredit; therefore, the null hypothesis was rejected in this case. Hence, Microcredit utilization contributes immensely to sustainability of poultry egg production in the study area as indicated by high net farm income recoded in this study for microcredit users.

Table 16: Hypothesis Testing for Difference in Net Farm Income between Microcredit Users and Non Users among Poultry Egg Producers

Test	Mean Net Farm Income	Standard Deviation	N	Df	T-Value	Sig	Decision
Net Farm Income Microcredit Users	13870.93	3630.80	60	118	14.26	0.00	**Reject H₀**
Non Users of Microcredit	5586.68	2657.47	60				

Source: Computed from Field Survey Data, 2019

V. Conclusion and Policy Recommendations

Conclusion

Based on the results of this study, it can be concluded that gross margin, net farm income and Rate of Return on Investment (RROI) were higher for microcredit users compared with non-users of microcredit among the poultry egg producers in the study area. The study has indicated that microcredit users and non-users among poultry egg producers were predominantly men who have married. The average age of 44years and 53years

were observed for users and non-users of microcredit respectively. The socio-economic factors that were found to positively influence the poverty status of microcredit users include age, gender, household size and method of land acquisition while age, gender, household size, marital status, and method of land acquisition were variables that positively influenced the poverty status of non-users of microcredit among the poultry egg producers in the study area. On the other hand, educational level, farm size (number of birds), household income, marital status, poultry egg farming experience and system of management were variables that negatively influenced the poverty status of microcredit users while educational level, farm size (number of birds), household income, poultry egg farming experience and system of management negatively influenced the poverty status of non-users of microcredit among the poultry egg producers in the study area. In comparing the poverty status of the two categories of poultry egg producers, the poverty status of non-users of micro credit was found to be greatly higher than that of the micro credit users.

Policy recommendations
Based on the conclusion, the following policy recommendations were proffered:
1. Microcredit should be made available and accessible to poultry egg producers at a low interest rate to enhance expansion of their production, thereby generating more income leading to reduction in their intensity of poverty.
2. The predominant of male in poultry egg production in the study area indicate low involvement of female in the poultry egg production business, it is therefore imperative to encourage the female to participate in poultry egg production to assist their husband financially via additional source of income.to the household.
3. The average age of 44years and 53years for users and non-users of microcredit respectively in the study area is an indication of low participation of youth in poultry egg production business. Since poultry egg production was observed to be profitable in the study area, therefore, the government at all levels (Local, State, and Federal) should endeavor to use poultry egg production business to reduce the intensity of poverty in the country.
4. Poultry egg producers should be encouraged by government to be more educated since the level of education decreases their poverty intensity.
5. Since poultry egg farming experience contribute to increase in productivity and decline in poverty intensity among poultry egg producers, therefore poultry egg producers should endeavor to attend seminars and workshops in order to update their knowledge and experience of poultry egg farming to ensure continuous contribution of poultry egg production to sustainable food security in the country.

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