Comparative Analysis of the Effect of Agricultural Credit on Small Scale Poultry Enterprise in Owerri Agricultural Zone, South Eastern, Nigeria

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Abstract
This study compared the effect of agricultural credit on beneficiaries and non-beneficiaries among small scale poultry enterprise operators in Owerri Agricultural Zone, South Eastern, and Nigeria. It utilized data obtained through personal administration of pre-tested questionnaires to respondents selected by purposive and random sampling methods. Data were analyzed using the enterprise budget model, multiple regression analysis and t-test. Majority of the respondents were women who fall within the age range of 41-50 years. Loan beneficiaries accessed their loans from isusu clubs owing to absence of stringent conditionalities and affordable interest rates hence their acquired input and production output was significantly higher than those of non-loan beneficiaries. Constraints to credit access included lack of collateral and high interest rates. Average amount disbursed as loan to beneficiaries ranged from N151, 000 – N200, 000 and was determined by a farmer's financial background and ability to repay. Loan beneficiaries earned an annual gross margin of N365,800 and net production income of N358,300 while non-beneficiaries earned N117,280 and N113,880 as annual gross margin and net production income respectively. Production output of loan beneficiaries were significantly influenced by age, educational level, production experience, cost of feeds, amount borrowed and cost of veterinary services while household size, production experience and cost of veterinary services significantly influenced production output of non-beneficiaries. The study recommends that small scale farmers should organize themselves into co-operative groupings. This would go a long way to assist them in accessing credit. Credit should be made accessible and available at minimal cost and encumbrance to small scale poultry farmers especially by formal credit institutions. Strengthening the extension service delivery system will enhance productivity and sustainability of small scale poultry enterprise.

Keywords: *Credit, Small scale, poultry, farmers, enterprise, gross margin*

Introduction

Poultry is one of the most important agricultural sectors serving as "safety net" providing ready cash in emergency needs as well as an important source of protein for consumers. Its role in rural livelihoods and food security is enormous especially in bridging the protein gap in Nigeria (Nimoh et al, 2011). The poultry industry also provides employment opportunities for the populace thereby serving as a source of income to the people. There are several challenges facing the poultry industry. According to Sakyi (2008) financial intermediaries are

continually faced with challenges in providing financial services to the agricultural sector. In view of the reluctance of formal financial institutions to enter rural markets because of the high cost and risk of doing business in harsh economic and physical environments, informal financial institutions emerged, but typically they are only able to offer a narrow range of financial services in a small geographic area (Mpuga, 2004). Credit supply to farmers is widely perceived as an effective strategy for enhancing the increase in agricultural productivity (Philip et al, 2008). Agricultural credit is considered essential to the process of improving agriculture and transformation of the rural economy. According to Mahmood et al (2009), the introduction of easy and cheap credit is the quickest way for boosting agricultural production. The argument is that the agricultural sector depends more on credit than any other sector of the economy because of the seasonal variations in the farmer's returns and credit requirement in the transformation of subsistence to commercial farming. Credit provides the opportunity for them to earn more money and improve on their standard of living (Mahmood et al, 2009 and Olagunju, 2010). Ijere (1998) suggested that credit in the poor farmers hand will enable him reap the economies of scale, discover new and cheaper products, create demands where none exists and provide utilities to satisfy a wider market. Further, it will generate in him the optimism and determination to venture into new fields. There are evidences that in some African countries, some farmers do not utilize effectively the funds they receive for the intended purposes. Because of this, formal credit has seldom made marked contribution to economic development (FAO, 1995).

In recent times government has been injecting funds into the agricultural sector yet small scale poultry farmers cannot access such funds owing to administrative bottlenecks as well as stringent conditions attached to lending. Small scale poultry farmers also contribute to the problem of credit acquisition through their lack of education (illiteracy) and high rate of default to mention but a few. It must be understood that the finance of agriculture at the small scale poses a great challenge. There are too many poultry farmers with very small units of need, each is extremely important for the productivity of the agricultural sector and yet it is the level that is most often neglected. On the other hand, if agricultural credit is granted to farmers especially to small scale poultry production enterprises it will increase their output, expand their scale of operation and consequently generate high returns in income and improvement in their standard of living. The quest now is this, how is this credit going to be accessible to a small scale poultry farmer? And also to make sure that its usefulness to agricultural and economic development is achieved by them. The specific objectives of this study include identifying the socio-economic characteristics of small scale poultry farmers, comparing enterprise profitability between loan and non-loan beneficiaries as well as the influence of socio-economic characteristics on the production output of both loan and non-loan beneficiaries. This study will provide relevant information that will help small scale poultry farmers expand their production enterprises, boost food security for the nation, ensure high returns on income and improve their standard of living. The outcome of this research will as well motivate government to provide or establish enough credit institutions for financing agriculture especially to the small scale poultry holders for increased agricultural production. It will also enable the nation to transform its agricultural sector from traditional and subsistence to modern and commercial agricultural business enterprise which could be made possible when small scale poultry farmers purchase improved breed, good quality feed, and modern equipment as well as engage in orderly marketing and storage of poultry produce. This will in turn raise the output and income of the producer, increase marketing surplus and raise the level of profit.

Methodology

Owerri Agricultural zone of Imo State is made up of 11 Local Government Areas. They include Aboh Mbaise LGA, Ikeduru LGA, Ohaji/Egbema LGA, Oguta LGA, Owerri Municipal LGA, Owerri North LGA, Owerri West LGA, Mbaitolu LGA, Ngor –Okpala LGA, Ahiazu Mbaise LGA and Ezinhitte Mbaise LGA. The area is located between latitude 5^0, 15'N and 5^0, 45'N and longitude $7^0$30'E and $6^0$45'E. The area falls within the lowland rainforest region dominated by oil palms and hyparrhenia grass species (Igbozuruike, 1995). According to the Nigeria 2006 census figures, the population densities of LGAs making up the agricultural zone vary between 191 persons/km^2 and 5113 persons/km^2. Majority of the inhabitants are farmers and the major crops grown include cassava, maize, yam, cocoyam, vegetables, tree crops and orchard crops. Most farmers produce at subsistence level on mixed farms with small scale livestock production (Chukwu and Okoli, 2012). A multi-stage sampling technique was employed in this study. First stage involved purposive selection of the 11 LGAs in the Zone. In the second stage, 4 communities were randomly selected from each LGA. The third stage involved random selection of 2 beneficiaries and 2 non-beneficiaries of agricultural loan from each community. This brings the total respondents in each community to 4 and 16 for the 4 communities in each LGA. Sixteen (16) respondents from the eleven LGAs brings the total sample size to 176 i.e. 88 loan beneficiaries and 88 non-loan beneficiaries. In this study, descriptive statistics, frequency distribution, simple percentages/tables were used to represent the response, students t-test was used to test the significance of mean values for small scale poultry farmers that are agricultural loan beneficiaries and non- loan beneficiaries. The student t-test statistic is given as:

$$T = \frac{X_1 - X_2}{\sqrt{\frac{S_1 - S_2}{N_1 - n_2}}}$$

Where

X_1= Mean of farmers with credit,
X_2=Mean of farmers without credit
N_1= Sample size for farmers with credit
N_2=Sample size for farmers without credit
S_1= Variance for farmers with credit
S_2= Variance for farmers without credit.
T= estimated t-values

Gross Margin and Net Production Income analysis were used to establish enterprise profitability. The method is stated as:

GM = TR – TVC
NPI = GR – TC (TVC+TFC)
Where
GM = Gross Margin (₦)
TR = Total Revenue (₦)
TVC = Total Variable Cost (₦)
NPI = Net Production Income (₦)
TC = Total Cost (₦)

Multiple regression model was used to establish the effect of respondents socio-economic factors on production output of small scale poultry producers. The model is given as:

Y = f (AGE, HSS, EDU, EXP, COF, VET, AMB, ei)

Explicitly the model is given as:

$Y=ß_0+ ß_1AGE+ ß_2HSS+ ß_3EDU + ß_4EXP+ ß_5COF +ei$

Where

Y = Production output of poultry birds, eggs (number)
AGE = Age of respondents (years)
HSS = Household size (number)
EDU = Educational level (years)
EXP = Production experience (years)
COF = Cost of feeds (₦)
VET = Veterinary services (₦)
AMB = Amount borrowed (₦)
ei = Error term

Results and Discussion

From Table 1 it can be observed that small scale commercial poultry enterprise is dominated by those within the age range of 41-50 (31.83%) for loan beneficiaries and 35.2% for non-beneficiaries. This is closely followed by those in the age range of 31-40 (28.4% and 26.1%) and those within the 20-30 age brackets (21.53% and 18.18%) for loan and non-loan beneficiaries respectively. These are young, active and energetic people who could afford to venture into the poultry business which is known to be characterized by risks such as disease and pilfering. Majority of the commercial small scale poultry farmers were females (61.36% and 54.54%) respectively for loan and non-loan beneficiaries. Since most of the business is located within their residential premises, it gives them ample time to attend to other domestic duties. The other respondents who are males may have engaged in poultry production as a supplementary occupation. Among loan and non-loan beneficiaries, it can be observed that married people dominate small scale poultry production with 52.27% and 55.68% respectively. They are well established in families and therefore engage in poultry farming as means of meeting family obligations. This is followed by singles (32.95% loan beneficiaries and 29.5% non-loan beneficiaries). These are people who are trying to get them established before starting family life and therefore devote much time to the business. About 12.5% loan beneficiaries and 17.04% non-loan beneficiaries had no formal education. However 14.77% of both loan beneficiaries and non-beneficiaries had first school leaving certificate. Majority of the respondents (32.95%) for both loan and non-loan beneficiaries had the privilege of junior secondary education while 17.04% and 20.45% respectively had secondary education. Poultry farmers need to have good education on poultry keeping so that they are able to properly harness all available resources to the advantage of production process. With this the level of production per poultry farm will increase. Knowledge about the latest research efforts in the areas of genetic engineering and health management particularly as they affect the prevention of communicable diseases such as avian influenza (bird flu) is necessary for effective performance and increased productivity of the poultry industry. Table 1 further show that about 50% loan beneficiaries and 51.13% non-loan beneficiaries had between 6-10 years' experience in poultry keeping. This is followed by those with 11-15 years of experience with 32.95% and 34.09% for beneficiaries and non-beneficiaries respectively. Expectedly the more the number of years of experience in poultry keeping, the better the ability to manage the poultry business well. Cases of disease attack, fire outbreaks, poor feed quality and pilfering is better handled by experienced poultry farmers. 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 farmers. It can be observed that 45.4% loan beneficiaries and 53.4% non-beneficiaries had an average household size of 7. This is followed by those with 12 as average household size (40.9% for loan and 31.18% for non-loan beneficiaries. This implies that the poultry farm operators in Owerri Agricultural zone, Imo State Nigeria generally had a large family size. The family might be exploited as cheap source of labour for the poultry farm. However 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. Majority of the respondents (35.22%) sourced their loan from Isusu clubs, while 26.13% sourced theirs from relatives and friends. Recourse to these two sources for loan could be due to absence of stringent conditionalities and affordable interest rate where it applies. None of the respondents were able to access bank loan which could be due to lack of collateral. Only 15.9% resorted to money lenders for loan. Many respondents go to money lenders as a last resort in view of the high interest rates attached to such borrowed funds. Only a few of the poultry farm operators were able to access loans from microfinance banks (5.68%), Fadama and Bank of Agriculture (4.54%) State and Local Government loan scheme (5.68%) and NGOs (6.81%). This finding strongly suggests additional sources of funds for poultry farmers to sustainably solidify their financial base with assured increase in output level. The Table further shows that 35.22% of non-loan beneficiaries could not obtain loans because they had no collateral security which is a major requirement by most institutional lenders especially commercial banks. 31.81% could not access loan in view of high interest rate attached to such loans. 17.04% were not interested in collecting loan in view of some stringent conditionalities. 12.5% were not aware of any loan facility which one can access while 3.4% of the respondents application for loan was not granted. Majority of the respondents (29.54%) obtained an average of N175, 000 as loan. This is followed by those who obtained an average of N150, 000 as loan (26.13%). Those who obtained an average amount of N225, 000 constitute 22.72%. The loan amount obtained by beneficiaries is small and may be inadequate in stocking substantial number of birds. This result strongly suggests that owner's equity may constitute a veritable source of their investment capital. The small amount obtained as loan can be attributed to respondent's financial background and credit worthiness. Those with meager resources cannot borrow over or above what they are incapable of repaying. Since one's financial background is a major determinant of level of borrowing, this result is an indication that majority of the respondents are in extreme poverty and therefore cannot access sufficient funds for investment purposes. This finding agrees with (Aligbe and Effiong, 2012).

The analysis of estimated average annual costs and returns from poultry production for loan beneficiaries reveal the total variable cost of N522, 200 and gross revenue of N888, 000. Feeds, drugs and vaccines make up about 87.5 per cent of total variable cost. Estimate of average annual gross margin is N367, 880. The corollary of this result is that loan beneficiaries are able to earn reasonable profit by engaging in poultry production. Amount accessed as loan could have assisted them in the realization of this level of profit. This implies that if poultry farmers have access to larger volume of credit, they could make more profit from business expansion arising from economies of scale. This fact agrees with Effiong et al (2013). The estimate of average annual costs and returns for non-loan beneficiaries show total variable cost of N181, 280 and that cost of feeds and veterinary services take up 86.3 per cent of total production cost. Estimate of average annual gross margin is N117, 280. This shows that non- loan beneficiaries also make some profit by engaging in poultry production. However, this level of profit cannot provide sufficient income for family sustenance and at the same time regeneration of business income. This explains why most poultry farms fold up too soon. Lack of access to loanable funds may with time lead to the ultimate collapse of small scale poultry enterprises with devastating consequences on the economy.

Multiple regression analysis was adopted to predict the effect of respondent's socio-economic factors (independent variables) on production output dependent variable. The selected predictors were age (AGE), household size (HSS), educational level (EDU),

production experience (EXP), cost of feeds (COF), amount borrowed (AMB) and cost of veterinary services (VET). Data was fitted to four functional forms of linear, exponential, semi-log and double-log regression and analyzed using SPSS statistical package. Out of the outputs of the four functional forms, the linear form's output was best in terms of signs, magnitudes and number of significant parameter estimates and therefore chosen as the lead equation. Out of the seven regressors included in the model, six (age, educational level, production experience, cost of feeds, amount borrowed and cost of veterinary services) were positively signed and statistically significant on production output at the 5 per cent level of probability. One regressor (household size) was not statistically significant. The coefficient of age, educational level, production experience, cost of feeds, amount borrowed and cost of veterinary services were positively and statistically significant at the 5 per cent probability level. The implication is that the older the poultry farmer, the more the production experience and resources that would be required to enable the producer invest more and thereby produce more poultry birds and eggs. The probability of educational level on poultry production implies that education equips the farmer with knowledge and information to efficiently operate a productive poultry farm. Also in the same category is the cost of feed (COF) which is significant at 5 per cent level. This had a direct bearing on policy formulation as good quality and sufficient feeds were required for good performance of poultry birds. Hence good quality feeds should attract topmost importance on the priority list of the investors in poultry business. The probability of the impact of amount borrowed and cost of veterinary services shows the positive impact of credit on poultry productivity. More birds can be produced by increasing the amount disbursed as loan to farmers. It also shows that payment for veterinary services will ceteris paribus engender higher output of poultry. Further result of the multiple regression analysis revealed the coefficient of multiple determinations (R^2) to be 99.9 (99.9%), implying that 99.9% of variation in production output of the respondents was explained by the independent variables, while the remaining 0.1 % was due to error. The F-statistic value of 10189.558 was significant and confirms the overall significance of the regression analysis. Also the Durbin Watson statistic value of 1.466 indicated the absence of autocorrelation among observations of the factors considered. The result of the multiple regression model estimates for non-loan beneficiaries is shown in Table 7 . The Table shows that three of the variables (household size, production experience and cost of veterinary services were significant for farmers without credit. This implies that the use of more household labour, benefit of production experience acquired over the years and increased expenditure in veterinary services will *ceteris paribus* increase production output by small scale poultry operators. The coefficient for age was positively related with output but not statistically significant. This implies that as respondents grow older they may acquire resources and invest to increase production output. The estimated coefficient of cost of feeds was negatively signed and not statistically. This could imply that in the absence of credit facility small scale farmers without credit do recourse to the use of cheap available local alternative feed materials which may not engender high productivity. The results obtained for small scale farmers with credit indicated that they are resourcefully more efficient than their counterparts producing without credit. The findings underscore the need for credit in order to boost the regular supply of poultry products in the study area. Further result of the multiple regression analysis (Table 8) revealed the coefficient of multiple determinations (R^2) to be 99.6 (99.6%), implying that 99.6% of variation in production output of the respondents was explained by the independent variables, while the remaining 0.4 % was due to error. The F-statistic value of 4362.198 was significant and confirms the overall significance of the regression analysis. Also the Durbin Watson statistic value of 2.467 indicated the absence of autocorrelation among observations of the factors considered. The result of the t-test analysis in Table 9 suggests that the level of poultry produced by respondents is generally low and

shows a significant difference between beneficiaries and non-beneficiaries of credit at the 5 per cent level of probability. Credit beneficiaries produced more birds than non-beneficiaries. This result is expected and points to the positive impact of credit on poultry productivity. This result is a validation of our *a priori* expectation that agricultural loan beneficiaries possess some advantages over non-beneficiaries. This result is a pointer to the fact that those in the former category are able to increase their production output while those in the latter category stagnate.

Conclusion and Recommendations

Insufficient funding of small scale poultry has limited the spate of development of the industry in the study area. This has often caused low level of production output in the industry. This study shows that credit is very crucial in attempting to boost the supply of poultry and products to meet the nutrition requirement of a teeming population. Small scale farmers should form themselves into co-operatives in order to reposition themselves to access credit from formal financial institutions as the size of loan from accessed from informal sources is dismally low and inadequate for business expansion. Credit from formal financial institutions should be made available and accessible at minimal cost and encumbrance to small scale poultry operators in the study area. There should be a well co-ordinated extension delivery system to educate small scale poultry farmers on new poultry breeds, nutrition and control of pests and disease.

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TABLE 1: SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENTS

Age(Years)	**Loan**	**Beneficiaries**	**Non-Loan**	**Beneficiaries**
	Frequency	**Percentage**	**Frequency**	**Percentage**
20-30	19	21.53%	16	18.18%
31-40	25	28.4%	23	26.1%
41-50	28	31.83%	31	35.2%
51-60	13	14.7%	10	11.36%
>60	3	4.29%	8	11.36%
Total	**88**	**100**	**88**	**9.09%**
Sex	**Loan**	**Beneficiaries**	**Non-Loan**	**Beneficiaries**
	Frequency	**Percentage**	**Frequency**	**Percentage**
Males	34	38.63%	40	45.45%
Females	54	61.36%	48	54.54%
Total	**88**	**100**	**88**	**100**
Marital Status	**Loan**	**Beneficiaries**	**Non-Loan**	**Beneficiaries**
	Frequency	**Percentage**	**Frequency**	**Percentage**
Single	29	32.95%	26	29.5%
Married	46	52.27%	49	55.68%
Divorced/Separated	5	5.7%	4	4.45%
Widows	8	9.09%	9	10.22%
Total	**88**	**100**	**88**	**100**
Educational	**Loan**	**Beneficiaries**	**Non -Loan**	**Beneficiaries**
Qualification	**Frequency**	**Percentage**	**Frequency**	**Percentage**
No Education	11	12.5%	15	17.04%
FSLC	13	14.77%	13	14.77%
JSSCE	29	32.95%	29	32.95%
WASC/GCE/SSCE	15	17.04%	18	20.45%
OND/NCE	10	11.36%	8	9.09%
HND/BSC	8	9.09%	3	3.40%
PGD,MSc/Phd	2	2.27%	2	2.27%
Total	**88**	**100**	**88**	**100**
Experience	**Loan**	**Beneficiaries**	**Non-Loan**	**Beneficiaries**
(Years)	**Frequency**	**Percentage**	**Frequency**	**Percentage**
1-5	10	11.36%	9	10.22%
6-10	44	50%	45	51.13%
11-15	29	32.95%	30	34.09%
>15	5	5.68%	4	4.54%
Total	**88**	**100**	**88**	**100**
Household	**Loan**	**Beneficiaries**	**Non-Loan**	**Beneficiaries**
Size	**Frequency**	**Percentage**	**Frequency**	**Percentage**
1-4	9	10.22%	9	10.22%
5-9	40	45.4%	47	53.4%
10-14	36	40.9%	28```````````````````	31.18%
>15	3	3.4%	4	4.54%
Total	**88**	**100**	**88**	**100**

Source: Field Survey, 2015

TABLE 2: SOURCE OF LOAN OBTAINED BY BENEFICIARIES

Source	Frequency	Percentage
Money Lenders	14	15.9%
Relatives/friends	23	26.13%
Isusu Clubs	31	35.22%
Microfinance Banks	5	5.68%
Commercial Banks	0	0%
Fadama lll, Bank of Agriculture	4	4.54%
State Govt., Local Govt.	5	5.68%
NGOs	6	6.81%
Total	**88**	**100**

Source: Field Survey, 2015

TABLE 3: REASONS FOR NOT OBTAINING LOAN

Reasons	Frequency	Percentage
No awareness	11	12.5%
Not interested	15	17.04%
No collateral	31	35.22%
Application not granted	3	3.40%
High interest rate	28	31.81%
Total	**88**	**100**

Source: Field Survey, 2015

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TABLE 4: AMOUNT COLLECTED AS LOAN

Amount (N)	Frequency	Percentage
<150,000	23	26.13%
151,000-200,000	26	29.54%
201,000-250,000	20	22.72%
251,000-300,000	9	10.22%
301,000-350,000	5	5.68%
351,000-400,000	4	4.54%
>400,000	1	1.13%
Total	**88**	**100**

Source: Field Survey, 2015

TABLE 5: ESTIMATE OF AVERAGE ANNUAL GROSS MARGIN FOR LOAN BENEFICIARIES

Item	Unit Cost	Quantity	Amount
Feeds	N2700	156	N421,200
Drugs/Chemicals/Disinfectants			N27,000
Vaccines/Vaccination			N7,000
Wood shavings			N2,000
Transportation			N8,000
Day old Chicks	N220	250	N55,000
Miscellaneous expenses			N2,000

Total Variable Cost			N522,200
Fixed Cost			
Depreciation on housing			N5000
Depreciation on crates			N1500
Depreciation on feeders/drinkers			N1000
Total Fixed Cost = TVC+TFC N7, 500+ N522,200			
Gross Revenue			
Mean Value from sale of broilers	N2000	125	N250,000
Mean value from the sale of eggs	N20	28000	N560,000
Mean value from sale of spent layers	N600	125	N75,000
Mean value from the sale of manure	N100	30	N3000
Total Gross Revenue			N888,000

Gross Margin (GM) = 888,000-522,200 =N365,800
NPI = N888,000 – N529,700 = N358,300
Source: Field Survey, 2015

TABLE 6: ESTIMATE OF AVERAGE ANNUAL GROSS MARGIN FOR NON-LOAN BENEFICIARIES

Item	**Unit Cost**	**Quantity**	**Amount**
Feeds	N2700	52	N140,400
Drugs/Chemicals/Disinfectants			N8,000
Vaccines/Vaccination			N7,000
Wood shavings			N1,200
Transportation			N5,000
Day old Chicks	N220	84	N18,480
Miscellaneous expenses			N1,000
Total Variable Cost			**N181,280**
Fixed Cost			
Depreciation on housing			N2500
Depreciation on crates			N500
Depreciation on feeders/drinkers			N400
Total Fixed Cost			N3400
Total Cost= TVC+TFC N181280+ N3400 = N184,680			
Gross Revenue			
Mean Value from sale of broilers	N2000	42	N84,000
Mean value from the sale of eggs	N20	9408	N188,160
Mean value from sale of spent layers	N600	42	N25,200
Mean value from the sale of manure	N100	12	N1200
Total Gross Revenue			N298,560

Gross Margin (GM) =N 298,560 -N181,280=N117,280
NPI = N298560-N184,680= N113,880
Source: Field Survey, 2015

TABLE 7: ESTIMATED DETERMINANTS OF PRODUCTION OUTPUT BY LOAN BENEFICIARIES

Parameter	Linear	T-values
Constant	442.346	
AGE	.010	2.121**

HSS	.005	1.010
EDU	.576	23.253**
EXP	.115	9.269**
COF	.199	3.348**
AMB	.740	15.215**
VET	.115	9.269**
R^2	99.9	
Adjusted R^2	99.9	
F-statistic	10189.558	
D-W statistic	1.466	

Source: Computed from survey data, 2015

Notes: ** Significant at P≤ 0.05

D-W = Durbin Watson statistics

TABLE 8: ESTIMATED DETERMINANTS OF PRODUCTION OUTPUT OF POULTRY BY NON-LOAN BENEFICIARIES

Parameter	Linear	T- test
Constant	31.540	
AGE	.014	1.700
HSS	.026	3.229**
EXP	1.013	111.244**
COF	-.014	-1.577
VET	1.013	111.244**
R^2	99.6	
Adjusted R^2	99.6	
F-statistic	4362.198	
D-W statistic	2.467	

Source: Computed from survey data, 2015

Notes: **Significant at P≤ 0.05

D-W = Durbin Watson statistic

TABLE 9: ESTIMATED DIFFERENCE OF MEANS BETWEEN LOAN AND NON-LOAN BENEFICIARIES.

Credit Status	Mean	Standard deviation	t-values
Beneficiaries	200.2143	30.07088	55.705**
Non-beneficiaries	135.200	42.44471	26.650**

Source: Computed from survey data, 2015

Notes: **Significant at P≤ 0.05