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Commercialisation Level of Poultry Production in Minna Metropolis, Niger State, Nigeria

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Authors' contributions

This work was carried out in collaboration between all authors. Author JNN designed the study, wrote the protocol, analysed the data and edited the paper after peer-review. Author RCI managed the literature searches, supervised the data collection process and wrote the first draft of the manuscript, and author EZJ provided expert advice on some aspect of the management of poultry production. All authors read and approved the final manuscript.

Research Article

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ABSTRACT

Aims: The major objective of this study is to find out the proportion of commercial poultry farmers in the study area who procure credit for financing the production and determine the effect of credit on commercialization level of poultry farming in three selected local government areas in Niger state. While the specific objectives are to describe the socioeconomic characteristics of poultry farmers in the area, determine the effect of credit on poultry output in the study area, estimate and compare poultry commercialization index of credit and non-credit beneficiaries in the study area, determine the effect of credit on level of commercialization of poultry farmers in the study area, and examine the constraints faced by poultry farmers in the study area.
Study Design: Cross-sectional study.
Place and Duration of Study: Department of Agricultural Economics and Extension Technology, Federal University of Technology, Minna, Nigeria, between January 2011 and April, 2012.
Methodology: The sampling frame for this study is the poultry farmers in Minna Area, Nigeria who are involved in commercial production of either broiler or layer birds. Those

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raising local chickens were excluded. The sample of 120 commercial poultry farmers were randomly selected from the three Local Governments from a list of poultry farmers obtained from the Niger State Agricultural Development Project (NSADP). Data for this study was collected using standardised questionnaire administered through personal interactions with the respondents. The data collected were analysed using descriptive statistics and frontier production function.

Results: The result suggests that the level of commercialisation is generally low among the respondents and shows no significant difference between beneficiaries and non-beneficiaries of credit although beneficiaries of credit seem to be more business-oriented than non-beneficiaries. Also, the estimates of the frontier model shows that only output in 2010, eggs collected in 2008 in crates, eggs collected in 2010 in crates, cost of construction of housing and cost of hired labour significantly affected poultry population, although eggs collected in 2008 had inverse relationship with population. On the other hand, only output in 2009 and cost of medication did not have any significant relationship with household commercialisation index (HCI).

Conclusion: Most of the factors increased technical efficiency suggesting that the farmers tend to manage their farms very efficiently. In view of this, the farmers should be encouraged to see the need to use credit to enhance production and hence increase their HCI. There is need for the farmers to use enhanced production system like battery cage so as to reduce labour input for cleaning the housing.

Keywords: Household commercialisation index; commercialization; poultry production.

1. INTRODUCTION

The major Nigerian livestock resources consist of 13,885,813 Cattle; 34,453,724Goat; 22,092,602 Sheep; 3,406,381 Pigs; 104,247,960poultry [1]. From these figures, poultry is about 58.72 per cent of the total livestock resources, which indicates the place of poultry sub sectors in the livestock industry. The poultry industry has many branches. The two main branches are egg and Table meat production. The other branches include the production of chicks; point of lay pullets or ready to lay birds and of poultry feeds; the manufacturing of poultry equipment, and the processing or marketing of eggs and Table birds [2]. The poultry industry in Nigeria has gone through series of developmental stages in the last forty years. The industry has witnessed tremendous progress in all areas. Gradually the poultry keeping developed into a commercial enterprise involving thousands of birds. Large poultry units replaced small ones, while more efficient strains of birds, balanced feeds, intensive housing and better poultry equipment came into use. The industry however suffered a little set-back in the mid 80sas a result of feed crises, but today the industry is growing at a faster rate than before [3]. Small farms accounted and still accounts for about 99% of all output of most livestock's and crops grown in Nigeria [4]. The importance of the small scale farmers' contribution to National product and food is longer in doubt. However, since these farmers depends on family and hired labour which often constitutes over 60% of the total cash cost of production; the enterprises are run as family entities rather than business concern [5]. This has been one of the greatest problems of poultry farming which eventually translates in low output as a result of utilization of small amount of credit to finance this farm operation [6]. In most cases, poultry farmers find it difficult to access credit this is because the credit institution (Banks) is either non-existent in their area or the process of obtaining the loan is not convenient and sometimes repulsive to farmers. The form fillings and the need for bank officials to visit their farms and for the fact that the loan is not readily available usually

discourages the poultry farmers [6]. In addition to these, poultry farmers face production problem such as high cost of inputs especially feed, drugs and chemicals. All these hinder the effective management of poultry industry and can result in reduction in the supply of products in market, hence affect the level of commercialization. As such the study would like to assess the impact of credit facilities to the development of these poultry farmers and also determine among others how these credits were granted and how it could improve the level of commercialisation [7].

The commercialization of poultry-keeping is a recent development in the humid tropical countries. In these countries as contrasted with the temperate, the industry is less capitalized, it consists of smaller units and depends more on manual labour. The birds usually perform at a lower level and partly on this account the cost of poultry production is higher. All these factors contribute to the low level of commercialisation of poultry production in the tropics [8]. The key factor in commercialisation is high capital investment and access to credit [9]. Agricultural credit is a financial term that refers to loans and other types of credit extended for agricultural purposes [10,11]. The word credit is derived from the Latin word ‘’credo’’ which means belief by the lender in the ability and willingness of the borrower to fulfil financial obligations [12]. Credit can also be defined as a process of obtaining control over the use of money, goods and services, currently in exchange for a promise to repay at future date [10,11]. Credit in this context of our discussion is the offer of the use of cash or kind with the aim of investing or utilizing it for agricultural purposes with the promise of paying back of such offer based on the terms of agreement made earlier. However, farmers in a bid to commercialise their operation need credit but farmers in Nigeria face a lot of challenges and constraints in securing credit which has hindered the prospect of commercialisation [7]. In view of the foregoing, it is necessary to find out the level of commercialisation of poultry production and determine factors that may accentuate it. The major objective of this study is to find out the proportion of commercial poultry farmers in the study area who procure credit for financing the production and determine the effect of credit on commercialization level of poultry farming in three selected local government areas in Niger state. While the specific objectives are to describe the socioeconomic characteristics of poultry farmers in the area, determine the effect of credit on poultry output in the study area, estimate and compare poultry commercialization index of credit and non-credit beneficiaries in the study area, determine the effect of credit on level of commercialization of poultry farmers in the study area, and examine the constraints faced by poultry farmers in the study area.

This study is necessary because it gives us an insight into how credit facilities granted to the poultry farmers in the study area has contributed to increased commercialisation and empirical evidence to the factors that are keys to poultry production which may influence policy especially with regards to the transformation agenda of government.

2. METHODOLOGY

The study was conducted in the three Local Government Areas (LGAs), namely Bosso, Chanchaga and Paikoro Local government Areas in Minna metropolis, Niger State, Nigeria. Niger state was created on the 3rd February, 1976 from the defunct of North-Western states of Nigeria, with the capital at Minna. The state comprises of twenty five Local Government Areas out of which three where chosen for the study. The state is a multi-ethnic state with an area of 76,000km, which is about 10% of the total land area of the country. The state has a population of 3,750,249 people [13]. The three LGAs were selected as the study area because of high population and a very diverse population in terms of occupation, ethnic groups, population, income group, farming operations, etc. Besides being a commercial

centre, there is high production and consumption of agricultural produce such as poultry and poultry products (both local and exotic).

The sampling frame for this study is the poultry farmers in the selected local government who are involved in commercial production of either broiler or layer birds. Those raising local chickens were excluded. Forty commercial poultry farmers were randomly selected from the three local governments from a list of poultry farmers obtained from the Niger State Agricultural Development Project (NSADP) giving a sample of 120. Equal sample was randomly selected from each Local Government Area so as to maintain fixed budget. The population is as follows:

Local Government	Population of commercial poultry farmers	Sample size
Bosso	89	40
Chanchaga	95	40
Paikoro	72	40

Data for this study was collected using standardised questionnaires administered through personal interaction with the respondents. The data collected were analysed using descriptive statistics and regression analysis. To describe the socio-economic characteristics of the respondents and to examine the constraint faced by the respondents, descriptive statistic such as Tables, percentage, frequency distribution and interpretation of findings were used. In order to determine the effect of credit on poultry output and commercialisation level, a frontier production function was estimated as follows:

$$Y_{ij} = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + V_i - U_i$$

a, B_1 to β_{13} are coefficients to be estimated and V_i and U_i are error terms which are strictly nonnegative and symmetric distribution, respectively. Where j=1, 2 and Y_1 = population of the birds while Y_2 = household commercialisation index, the definitions of the X-variables are presented on Table 1. Before the HCI model was estimated, the quantity of eggs collected were converted to kilogramme using wheat grain equivalent and added to the quantity of chicken meat harvested. The determinants of U_i are as follows:

$$U_j = (+ \delta_1Z_1 + \delta_2Z_2 + \delta_3Z_3 + \delta_4Z_4 + \delta_5Z_5 + \delta_6Z_6 + \delta_7Z_7 + \delta_8Z_8 + \delta_9Z_9 + \delta_{10}Z_{10} + \delta_{11}Z_{11} + \delta_{12}Z_{12} + \delta_{13}Z_{13}$$

And δ_1 to δ_{13} are coefficients to be estimated while the definitions of the Z-variables are presented on Table 1. The estimation was done using Stata Statistical/Data analysis 11.2 software [14].

To compare commercialization index of credit and non-credit beneficiaries, household commercialization index was computed as follows:

$$HCI = \frac{Gross\ value\ of\ all\ poultry\ products\ sold}{Gross\ value\ of\ all\ poultry\ products\ produced} \times 100$$

According to Onyebinama [15] and Manyong et al. [16] commercialization index is the ratio of gross value of farm output to the actual value sold. Also it measures the extent to which household production is oriented towards the market. It ranges from zero to 100%. A value of zero signifies a totally subsistence oriented producer. The closer the index is to 100 the higher the degree of commercialization. Student t-test was used to test the significance of mean values of commercialization index for credit and non-credit beneficiaries as follows:

$$t = \frac{\overline{X_1 - X_2}}{\sqrt{\frac{S_1^2}{n_1} - \frac{\overline{S_2^2}}{n_2}}}$$

Where $\overline{X}_1$= Mean HCI farmers with credit, $\overline{X}_2$= Mean HCI 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.

Table 1. Definition of the variables in the frontier model and their properties

Variable name	Unit of measure	Storage type	Display format	Mean	Std. Dev.	Min	Max
Number of drinkers (X_1)	number	byte	%8.0g	34.95041	17.68844	8	90
Number of feeders (X_2)	number	byte	%8.0g	24.02479	12.84748	5	70
Output in 2008 (X_3)	Kg	float	%8.0g	104.4008	252.8214	0	1600
output in 2009 (X_4)	Kg	float	%8.0g	175.2273	541.0303	0	3600
output in 2010 (X_5)	Kg	int	%8.0g	279.4628	630.733	0	4000
Eggs collected in 2008 in crates (X_6)	number	int	%8.0g	37.72727	117.3446	0	650
Eggs collected in 2009 in crates (X_7)	number	int	%8.0g	35.54545	90.6245	0	480
Eggs collected in 2010 in crates (X_8)	number	int	%8.0g	45.20661	114.7722	0	640
Cost of construction of housing (X_9)	Naira	long	%8.0g	274900.8	885867.2	0	5000000
Population of birds (Y_1)	number	int	%8.0g	531.405	553.6618	30	2000
HCI (Y_2)	number	Int	%8.0g	26.25		1	70
cost of hired (X_{10})	Naira	int	%8.0g	1505.785	3082.188	0	16000
cost of medication (X_{11})	Naira	long	%8.0g	13314.05	36203.1	0	390000
Amount of formal loan (X_{12})	Naira	long	%8.0g	10537.19	40351.59	0	250000
Amount of informal loan (X_{13})	Naira	long	%8.0g	24752.07	80756.45	0	600000
Determinants of U_i							
Gender (Z_1)	if male 1, 0 otherwise	byte	%8.0g	0.619835	0.487446	0	1
Age (Z_2)	Years	byte	%8.0g	42.28099	4.615595	30	53
Marital status (Z_3)	if married 1, 0 otherwise	byte	%8.0g	0.68595	0.466066	0	1
Household size (Z_4)	number	byte	%8.0g	7.975207	2.60916	3	14

Cont'd Table 1.

educational status (Z_5)	if university graduate, 1 otherwise 0	byte	%8.0g	0.140496	0.348946	0	1
Number of years of experience in poultry production (Z_6)	number	byte	%8.0g	5.942149	3.382054	2	16
Types of bird 2008 (Z_7)	If broiler 1, 0 otherwise	byte	%8.0g	0.583333	0.495074	0	1
Types of bird 2009 (Z_8)	If broiler 1, 0 otherwise	byte	%8.0g	0.491667	0.502027	0	1
Types of bird 2010 (Z_9)	If broiler 1, 0 otherwise	byte	%8.0g	0.561984	0.498206	0	1
system of production (Z_{10})	if deep litter system 1, 0 otherwise	byte	%8.0g	0.900826	0.300138	0	1
Collected loan (Z_{11})	If yes 1, 0 otherwise	byte	%8.0g	0.583333	0.495074	0	1
Collected formal loan (Z_{12})	If yes 1, 0 otherwise	byte	%8.0g	0.561984	0.498206	0	1
Collected informal loan (Z_{13})	If yes 1, 0 otherwise	byte	%8.0g	0.68595	0.466066	0	1

Source: Field Survey, 2011.

3. RESULTS AND DISCUSSION

The description of the socio-economic characteristics of the respondents is presented on Table 2 while Table 3 presents the distribution of the respondents based on the population of poultry birds, management system and level of harvest (i.e. chicken meat and eggs) as at the time of interview. Table 4 shows the distribution of the respondents based on the sources and amount of loan taken while Table 5 shows the distribution of the respondents based on their level of commercialisation. Table 6 shows the coefficient estimates of the frontier model for population of poultry birds and household commercialisation index. The estimates shows that only output in 2010, eggs collected in 2008 in crates, eggs collected in 2010 in crates, cost of construction of housing and cost of hired labour significantly affected poultry population, although eggs collected in 2008 had inverse relationship with population. On the other hand, only output in 2009 and cost of medication did not have any significant relationship with HCI but quite a number of the variables had inverse relation with HCI, contrary to expectation. In the inefficiency model, types of birds in 2009 did not bear any significant relationship on the population model but Educational status, number of years in poultry production and types of birds 2010 did not significantly affect inefficiency on the HCI model. However, Age of the farmers, marital status, educational status, number of years in poultry production, types of birds 2008 and system of production increased technical efficiency of commercial poultry farmers while age, household size, educational status, number of years in poultry production, types of birds 2010, procurement formal and informal loan tend to increase technical efficiency their HCI. Table 7 is a presentation of the various reasons adduced for not assessing loan either from formal or informal sources and Table 8 shows the various constraints faced by poultry farmers in the area.

Table 2. Socio-economic characteristics of the respondents

	Freq.	%
Sex		
Male	75	62
Female	46	38
Age (years)		
<21	6	5
21-30	33	27
31-40	50	41.3
41-50	28	23.1
51-60	4	3.3
Mean 42yrs		
Marital status		
Unmarried	3	2.5
Married	80	66.1
Divorced	28	23.1
Widow(erg)	0	0
Separated	10	8.3
Educational level		
Quaranic/No formal education	15	12.4
Primary education	5	4.1
Secondary education	32	26.4
Adult education	12	9.9
Tertiary education	57	47.1
Major occupation		
Farming	29	23.9
Civil servant	35	28.9
Trading	57	47.1
Household size		
1-5	19	15.7
6-10	67	55.4
11-15	28	23.1
16-20	7	5.8
Mean	9	
Farming status		
Full time	43	35.5
Part time	78	64.5
Years of experience		
1-5yrs	67	53.4
6-10yrs	36	29.8
11-15yrs	12	10.0
16-20yrs	6	5.0
Mean 5		

Source: Field Survey, 2011.

Table 3. Distribution of respondents based on various poultry characteristics

Class	2008	2009	2010
Farm size (population of birds)			
0 – 200	96	29	24
201 – 400	13	66	27
401 – 600	2	11	40
601 – 800	4	4	7
801 – 1000	1	2	8
1001 – 1200	3	3	0
1201 – 1400	0	1	1
1401 – 1600	0	1	3
1601 – 1800	0	2	2
1801 - 2000	2	2	5
2001 - 2200	0	0	0
2201 – 2400	0	0	1
2401 – 2600	0	0	3
N	121	121	121
Sum	29923	47004	73644
Mean	247	388	609
Maximum	2000	2000	2500
Minimum	10	20	30
Types of birds kept			
Broilers	50	61	53
Layers	70	59	68
Others	0	0	0
Number of crates of eggs harvested			
5-20	51	20	
21-40	21	32	23
41-60	8		28
61-80		3	
81-100			
101-120			7
121-140			
141-160	4		
161-180			
181-200		4	
461-480		4	
621-640			4
641-660	4		
	88	63	62
Broiler meat harvested in kg			
0-200	18	9	17
201-400	12	4	10
401-600	6	4	7
601-800		1	4
801-1000	1	4	2

Cont'd Table 3.

1001-1200			1
1201-1400			1
1401-1600	2	2	2
1801-2000			2
2201-2400		1	
2801-3000		1	2
3401-3600		1	
801-4000			1
	39	27	49
Production system			
Battery cage	10%		
Deep litter system	90%		

Source: Field Survey, 2011.

Table 4. Distribution of respondents based on sources and amount of loan (Naira*)

Formal source		**Informal source**	
Commercial banks via ACGFS	1	Relations	0
Commercial banks directly	0	Friends	0
NACRDB	1	Traders	4
Ministry of agriculture	5	Moneylenders	12
ADP	1	Cooperative society	4
Amount of loan taken			
35000	1	10000	1
50000	1	20000	2
70000	1	30000	2
80000	1	50000	3
120000	2	60000	2
150000	1	70000	2
200000	2	80000	1
250000	1	85000	1
		100000	1
		210000	1
		220000	1
		250000	1
		280000	1
		300000	1
		350000	1
		600000	1
Mean	127500		136136.4
SD	71695.73		146221.7
Min.	35000		10000
Max.	250000		600000

**USD = 160 Naira*

Source: Field Survey, 2011.

Table 5. Distribution of commercialization index of poultry farmers in the study area

Distribution	HCI of Credit beneficiaries		HCI of Non-beneficiaries	
	Freq.	%	Freq.	%
1.0 – 10.0	1	0.83	7	5.79
11.0 – 20.0	3	2.48	24	19.83
21.0 – 30.0	3	2.48	52	42.98
31.0 – 40.0	-	-	18	14.88
41.0 – 50.0	1	0.83	6	4.96
51.0 – 60.0	-	-	3	2.48
61.0 – 70.0	1	0.83	2	1.65
Total	9	7.45	112	32.57
Mean	26.71		25.81	
T	0.1496^{ns}			

Source: Field Survey, 2011.

Table 6. Coefficient estimates of the frontier production function of commercial poultry farmers in Minna Area

	Production frontier function of the population of birds	Production frontier function of HCI
Number of drinkers	-3.384355	.0002815***
	(2.624342)	(.0000671)
Number of feeders	.5950391	-.0001078***
	(3.492667)	(.0000372)
Output in 2008	-.1174815	.000037***
	(.1715096)	(8.60e-06)
Output in 2009	.0835033	3.58e-06
	(.0914208)	(4.52e-06)
Output in 2010	.2401262***	3.90e-06***
	(.0769881)	(8.25e-08)
Eggs collected in 2008 in crates	-2.211047**	.000407***
	(1.025449)	(.0000272)
Eggs collected in 2009 in crates	-1.592656	-.0001892***
	(1.067628)	(.0000102)
Eggs collected in 2010 in crates	3.496438***	-.0003201***
	(1.19211)	(.0000215)
Cost of construction of housing	.0002621***	-6.20e-09***
	(.0000528)	(1.88e-10)
Cost of hired labour	.0552336***	-2.24e-06***
	(.0141051)	(1.48e-07)
Cost of medication	-.0003544	2.13e-09
	(.0012896)	(4.73e-09)
Amount of formal loan	-.0008745	ne
	(.0010912)	
Amount of informal loan	-.0002768	ne
	(.000496)	
Constant	491.0029	.9883689
	(117.8868)	(.0036315)

Cont'd Table 6.

Estimate of v _cons	12.0924	-37.74178
	(.1307037)	(216.0176)
Inefficiency parameters		
Gender	1.904142***	.5503326*
	(.5052405)	(.3160213)
Age	-.0743819***	-.1170472**
	(.0267304)	(.0469431)
Marital status	-2.346884***	.7257397**
	(.2663738)	(.3293411)
Household size	.4946826***	-.2822007***
	(.0908004)	(.0769855)
Educational status	-1.176481***	-.5143888
	(.4027654)	(.4260002)
Number of years in poultry production	-.2155673***	-.0018204
	(.0594034)	(.050305)
Types of birds 2008	-2.68716***	.8082532**
	(.3423856)	(.3223337)
Types of birds 2009	.0503701	1.519383***
	(.1037234)	(.3858422)
Types of birds 2010	1.186155***	-.0941345
	(.1544462)	(.3070902)
System of production	-3.142715***	1.439519**
	(.2268799)	(.6496361)
Collected loan	ne	4.065518***
		(.894611)
Collected formal loan	ne	-1.357846***
		(.2553055)
Collected informal loan	ne	-.9975041***
		(.1861217)
Constant	12.53435	.9835627
	(.7242579)	(2.027098)
Sigma v	422.5052	6.37e-09
	(27.61149)	(6.89e-07)

*NB: ***P=.01, **P=.05, *P=.10, ne=not estimated, values in parenthesis are standard errors*
Source: Field survey, 2011

Table 7. Reasons given by the farmers for not accessing loan facilities*

Reasons	1	2	3	4	5	6	Rank
Lack of collaterals	39	1	5	24	31	21	1
Time wasted in pursuing the loan is too long	37	4	24	20	27	9	2
The short period between the time of loan acquisition and expected time of loan repayment	48	37	29	1	3	3	5
There is long distance between my village and the loan institution	48	34	26	11	2	0	6
High interest is charged on the loan	46	32	6	7	23	7	3
Amount of loan granted is too small compared to my credit need	56	13	20	12	14	6	4
Others	77	38	4	2	0	0	7

*1=No response, 2=strongly disagree, 3=Disagree, 4=Not sure, 5=Agree, 6=strongly agree * multiple response; Source: Field survey 2011.*

Table 8. Constraints facing poultry farmers in the study area*

Source of constraints	frequency	%
Pest and diseases	74	61.2
High cost of feed	68	56.2
Non-availability of market	43	35.5
Lack of skilled labour	46	38.0
Inadequate loan facilities	67	55.4
Theft	39	32.2
Others	6	5.0
Total	343*	

**=multiple response*
Source: field survey 2011.

The results on Table 2 indicates that about 62% of the respondents were male which agrees with quite a number of findings in this and similar areas, for example [17]. The mean age of 42 years corresponds with [18], implying that greater proportion of the respondents are in their active years. About 66% were married and 87.6% have acquired one formal education or the order. According to Simonyan et al. [19] education would significantly enhance farmers' ability to make accurate and meaningful decisions. Ogbe [20] also opined that level of education raises human capital and increases their level of managerial abilities which is an incentive for commercialization. The major occupation of respondents was trading, mean household size was 9. About 64.5% operates on part time bases, while the mean years of experience was 5 years.

The results on Table 3 show that the population of birds is on steady rise since 2009, even though majority are small scale producers, suggesting that some of the policies and programmes put in place might be having steady impact, for example, the 'one egg per child in school per day policy', and restriction of importation of poultry products by raising tariffs. The results also indicate that there were more egg producers and majority of them used the deep litter system.

The results on Table 4 indicated that less than 50% of the poultry farmers procured loan from formal and informal sources although it appears that they relied more on informal sources. This might be an indication that the farmers have lost confidence in the formal sources which is confirmed by the results on Table 6 where the issue of collateral was the strongest reason for not procuring the loan.

The result on Table 5 suggests that the level of commercialisation is generally low among the respondents and shows no significant difference between beneficiaries and non-beneficiaries of credit although beneficiaries of credit seem to be more business-oriented than non-beneficiaries. However, more of the poultry farmers did not procure credit. Probably due to the bureaucracy involved in credit procurement and the delay often involved in disbursement could serve as discouragement to the farmers that make them uninterested in the credit. Other reasons that could make the farmers uninterested in credit for production purposes might be the fear of diversion into some other uses hence increasing the possibility of loan default [21].

The indicator of the frontier model (Table 6) has clearly demonstrated that credit neither affected the production function of poultry producers nor their HCI. The result also show that the output has transited from negative to positive, indicating that the rise in population has

also been translated to increased output. Surprisingly, cost of medication tends to increase population of birds but reduces HCI. This type of swing in sign is shown by most of the factors that are significant on both models. The result for the inefficiency parameters is similar in behaviour to that of the production function. Most of the factors increased technical efficiency suggesting that the farmers tend to manage their farms very efficiently. In view of this, the farmers should be encouraged to see the need to use credit to enhance production and hence increase the HCI. There is need for the farmers to use enhanced production system like battery cage so as to reduce labour input for cleaning the housing [15, 22, 23].

The result in Table 7 suggests that the most important constraint faced by the respondents was the case of pest and disease infestation (61.2%) which is paramount to the level of output produced hence the degree of commercialization. The next important constraint is high cost of feed (56.2%). Although the first constraint can be minimised by the farmer abiding strictly with the medication and vaccination schedules, the second is beyond the control of the farmer. In addition, inadequate loan facilities and non-availability of market are also beyond the control of the farmer. Therefore, there is need to ensure that the inputs and output markets for poultry production should be made more conducive for farmers, especially the small and medium scale producers.

4. CONCLUSION

It is evident that there is great potential for the commercialization of the poultry industry in Nigeria. The findings of this study suggest that credit had no effect on commercialization of poultry enterprise in the study area, which could probably be due to delay in loan approval, high interest rate and loan diversion these eventually affects repayment ability of the farmers hence loan default. This was indicated from the result carried out with the regression analysis. Meanwhile some variables namely farm size, initial capital, medication, farming experience, output and enterprise type were significant in influencing commercialization of the enterprise. Hence In order to promote the commercialization of the poultry sub-sector, farmer's access to credit should be improved as this would help them increase their capital base and increase their farm size (number of birds) because this variable was significant in influencing poultry output and level of commercialization. The time lag involved in processing credit should be reduced so that poultry farmers would be able to access credit at the appropriate time. In addition, there should be deliberate policy to provide adequate credit supply (higher amounts), reduced collateral constraints, low interest rates, timely delivery and improved monitoring to see effective use with less chances of fungibility. Also farmers should be encouraged to form cooperatives in order to complement the insufficient credit sourced.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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