

Analysis of Credit Access and Utilization Among Poultry Farmers in Nigeria

Ayodeji Afolayan (✉ dejithfirst@gmail.com)

TechU: First Technical University

E. T. Omisope

National Agricultural Extension Liaison Service

Adedamola M. Ajayi

Obafemi Awolowo University Faculty of Agriculture

Oluwafemi Samuel Adeoti

Obafemi Awolowo University Faculty of Agriculture

Oluwatoyin F. Ogunjinmi

TechU: First Technical University

Research

Keywords: Poultry, farmers, Credit, Access, Utilization

Posted Date: February 1st, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-162833/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

This study assessed credit access and utilization among poultry farmers and its determinant. Primary data were analyzed from 78 farmers using multistage sampling technique using descriptive statistics, logit and multiple regression models. Findings from the study showed that majority of the respondents were in their active age and 75.6 percent of the poultry farmers were males. Majority (83.3 percent) of the respondents were married and educated. Majority was also in their active age (37.2 percent). The factors determining farmers' decision to use credit which were significant at 5 percent include; number of years spent in school, farm income, labour cost, cost of feeds and sources of capital while only interest rate was significant at 1 percent. Factors that influenced the credit utilization by the farmers in the study area at 5 percent significance level include; farm income, cost of feeds, and number of birds. It is recommended that subsidization of cost of feeds, usage of family labour, and provision of loan at no or low interest rate should be employed in the study area.

Introduction

Agriculture is a dominant sector of the Nigerian economy despite oil exploration, serving as a major source of livelihood in Nigeria (Afolayan, 2017; Olomola, 2018; FAO, 2020). Nigeria is a lower-middle income most populous country with a per capita income of \$2000 per year (Makun, 2018; SAHEL, 2015). Although Agriculture is a sector that is domiciled as a rural enterprise, but it provides employment for about 70 million people that constitute about 65 percent of the working population (Thornton, 2010; FAO, 2020). More specifically, World Bank (2014) highlighted that the sector contributes a large share (33%) of the Gross Domestic Product (GDP) and provides over 80 percent of the country's food resources (Adebayo and Adeola, 2017). This sector in the country is dominated by crop farming, livestock rearing, fishing and forestry.

The livestock industry in Nigeria is an active and viable component of the general sector continuing to grow an annual rate of 12.7 percent per annum (FAO, 2020). In terms of physical size, global Livestock industry covers about 30 percent of earth's unfrozen terrestrial surface and about 30.3 million hectares are used for pasture and other livestock needs (Thornton, 2010; Statista, 2020). In financial terms, the sector has a large global asset that is estimated to be about \$1.4 trillion while Nigeria's livestock sector is valued at \$ 78 billion (FAO, 2020). This sector is an important component of the entire country's agricultural sector, being a key contributor to economic growth and development with 2.29 percent to GDP in 2020 (NBS, 2020; FAO, 2020; Statista, 2021). Among the livestock enterprises, poultry occupies a pivotal position due it performance and enormous potentials for caloric needs, supplement income from crop and bring about economic growth (Herrero *et al.*, 2012).

The importance of poultry to Nigeria's economy, especially in the Southwestern part of the country, continues to grow with the increasing national number of 16 million smallholder households for protein needs and cash income (SAHEL, 2015; FAO, 2020). Among the various contributions of poultry and other livestock to livelihoods include social status, cash income, manure, insurance and savings (FAO, 2020).

According to FAOSTAT (2020), the poultry industry in the country has about 180 million birds, which is second only to South Africa in Africa (Aladejebi *et al.*, 2019). This sub-sector is largely experiencing good organisation at the beckoning of a deliberate national drive to promote agriculture from vocation to business and upgrading subsistence to commercial agriculture. Furthermore it has been identified that demand for poultry and other livestock products will increase due to population growth, urbanization and gains in real per capita income (FAO, 2020).

Poultry production system is one inundated with challenges that include availability and price of inputs, illegal importation of products and poor production techniques requiring capital for improvement (Kuye and Ogiri, 2019). Most livestock farmers cushion the effects of this production challenges using credit or loans because it provides cash reserves employed to invigorate the production process of their enterprises (ASL 2050, 2018). Sources that supply agricultural credit or loan include the formal and informal bodies consider giving loans to farmers as a high risk venture (Akinwunmi, 1988, Adebayo and Adeola, 2017). Albeit, Shultz (1964) emphasized that smallholder farmers, though efficient but poor, will continue to remain in technical and economic equilibrium trap if unaided. The availability of credit through accessible sources will help remove the limits to achieving high productivity and income in their enterprises (Otunaiya, 2007). Access to these financial services, either informal or formal by most of the peasant poultry farmers is perceived to be very small. Farmers tend to turn to informal sources as shown by meager 35 percent accessing credit through the formal financial system providing services in the country (CBN, 2005, Kuye, 2016).

This development makes it imperative to understand the gap being highlighted to be probable factors that bars farmers from accessing critical aid to production like credit. This scrutiny could be due to the characteristics of farms and farmers, inadequacies that exist in the distributing channels and set-ups of various formal services (Egwu *et al.*, 2020). Researches have examined different problems associated with agricultural loans but recent ones avoided analysis of factors like farm and farmers' characteristics in access and utilization in poultry industry recently (Akintunde *et al.*, 2020). In Nigeria, studies have been carried out to investigate the impact of credit on enterprises (Osabohien *et al.*, 2020; Ayanrinde *et al.*, 2020; Ojo and Ayanwale, 2019) and role of groups and social capital in accessing credit by farmers and improvement in their welfare given access to credit (Oyedele and Akinola, 2012; Balogun and Yusuf, 2011). It creates the need for credit utilization by farmers to be studies further which makes it better to evaluate whether the farmers use the credit for farming purposes or non-farm purposes like social function. This study will enrich literature on subject matter in the country and also equip policy maker, development theories or farmers to solve problem of credit's access and its utilization to enhance the growth and sustainability of poultry industry in Nigeria.

For these reasons, this paper seeks to answer the following question: (i) What are the socio-economic characteristics of poultry farmers in the study area? (ii) What is the nature of credit accessed in the study area? (iii) What are the factors affecting access to credit in the study area? (iv) What are the factors influencing credit utilization in the study area? This research analyzed the access and utilization of agricultural credit among poultry farmers in Osun State, Nigeria. This study specifically, described the

socio-economic characteristics of poultry farmers; examined the nature of agricultural credit in the study area; identified the determinants of credit access among poultry farmers; and examine the factors affecting credit utilization among the poultry farmers.

Methodology

a) Study Area

This research was carried out in Osun State, Nigeria, because the populace of the state is renowned for agricultural activities being the primary occupation of the inhabitants of the state. The state is the second highest livestock producer in Southwest Nigeria (Adebayo and Adeola, 2017; NBS, 2019).

b) Sampling Technique

Multistage sampling technique was used to select 78 respondents from the state. The first stage involves a purposive selection of three Local Government Areas (LGAs), the areas were selected based on the prevalence of poultry activities. A random selection of one town from each LGA constitutes the second stage. At the third stage, there was a random selection of thirty farmers from each LGA. A total of 90 questionnaires were administered out of which 78 were analyzable.

c) Method of data analysis

The analytical techniques used to achieve the objectives of this study were descriptive statistics, logistic regression and multiple regression analysis.

Logit regression was used to analyze loan acquisition in the study area which is the second objective. Binomial logistic regression model used for this study was designed such that for the dependent variable, it is dichotomous such that 0 if a farmer did not have access or utilize the credit for agricultural purposes and 1 otherwise. For this study, the predictor variables used include some of socioeconomic indicators of the respondents. These variables contain both dichotomous and continuous variables. Furthermore, P_j , represent the probability that the j-th farmer accessed the credit, is a Bernoulli variable whose distribution depends on the vector of predictors X, so that:

$$P_j(X) = \frac{e^{(\alpha + \beta x)}}{1 + e^{\alpha + \beta x}} \dots \dots \dots \text{i}$$

The logit function to be estimated is stated thus:

$$\frac{\ln P_j}{(1 - P_j)} = \alpha + \sum_i \beta_i X_{ij} \dots \dots \dots \text{ii}$$

This variable $\ln \left\{ \frac{P_j}{1-P_j} \right\}$ represents the natural log of the odds of the farmer having access to credit. Maximum likelihood estimates method was used to estimate the parameter highlighted in Equation iii with no assumptions of normality or homoskedasticity of errors in predictor variables.

Model specification

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, e) \dots\dots\dots(iii)$$

Where:

Y = Access to credit (1=access, 0= no access)

X₁ = household size

X₂ = number of years spent in school (years)

X₃ = farming experience (years)

X₄ = farm income (N)

X₅ = interest rate (%)

X₆ = contact with extension agents

X₇ = labour cost (N)

X₈ = cost of feeds (N)

X₉ = sources of capital

e = random error term

For the fourth objective, linear regression was used to identify the factors affecting the volume of loan utilized for on-farm purposes by poultry famers.

Y = Volume of Credit financing/funding (Naira)

X₁ = Net farm income (Naira)

X₂ = Off farm income (Naira)

X₃ = Educational Status (Years)

X₄ = Number of Birds (Number)

X_5 = Age (Years)

X_6 = Household size (Number)

X_7 = Gender (dummy 1 = male, 0 = female)

X_8 = Labour cost (Naira)

X_9 = Cost of chicks (Naira)

X_{10} = Cost of feed (Naira)

X_{11} = Extension (Number)

X_{12} = Source of credit (type)

X_{13} = Farm Expenditure (Naira)

X_{14} = Interest rate (%)

U_i = Error term

Results And Discussion

Socio economic characteristics

Table 1 showed the socio-economic characteristics of selected poultry farmers in Osun State. Most of the farmers interviewed were male 75.6% (59). The average age of the respondents was 31 ± 1 years. They were mostly (37.2%) distributed within 41 to 50 years old and were married 83.3% (65). This shows that most of the respondents are young, vibrant and capable of accepting new innovations and agrees with Iyiola-tunji (2015) that young farmers are explosive, dynamic and ever-ready to accept new innovations and mature to receive credit facility for poultry farming which correlates with the findings of Otunaiya, (2014). The average household size was 7. This posits that the labour required for the poultry activities could be obtained within the family. The respondents had some form of education starting from adult education (14.1%), primary (38.5%), secondary (42.3%) and tertiary education (1.3%). The majority (50%) of the respondent have 500 capacity poultry size. This shows that poultry farmer were subsistence farmers was the primary occupation of most (73.3%) of the respondents. About 52.8% of the respondents have above 5 years' experience of farming while the average income per month of the rural farm families was 60000 ± 1000.34 .

The study showed that 75.6% of poultry farmers were men. Majority was between age 41-50years and most of them were married. The most popular source of credit among the farming folk was cooperatives (51.3%) and most of the farmers who sourced for credit did so to expand existing farm enterprise

however, Loan repayment was encouraging among the credit beneficiaries. Most of the farmers (88.5%) were aware of credit sources and 73.1% of the farmers were financially constrained.

Table 1: Socio economic characteristics of respondents

Gender	Frequency	Percentage
Male	59	75.6
Female	19	24.4
Mean	0.69±0.02	
Age		
<30	10	12.8
31-40	22	28.2
41-50	29	37.2
51-60	14	17.9
≥61	3	3.8
Mean	31±10.42	
Marital status		
Single	11	14.1
Married	65	83.3
Divorced	1	1.3
Widowed	1	1.3
Educational status		
No education	3	3.8
Adult education	11	14.1
Primary	30	38.5
Secondary	33	42.3
Tertiary	1	1.3
Mean	14.2±5.37	
Household size		
≤2	11	14.1
3-4	21	26.9
5-6	36	46.2
≥7	10	12.8
Mean	5±1.37	

Farming experience		
≤5	41	52.6
6-10	22	28.2
11-15	11	14.1
≥16	4	5.1
Mean	11±8.22	
Poultry size		
<500	39	50
501-1000	18	23.1
1001-1500	10	12.8
1501-2000	5	6.4
>2000	4	5.1
Mean	450±181.37	
Farm income		
0 – 20000	12	15.4
20001 – 40000	20	25.6
40000 – 60000	26	33.3
60000 – 80000	18	23.1
>80000	2	2.6
Mean	60000±1000.34	

Source: Field Survey, 2019

Characteristics of Agricultural loan in the study area

Table 2 shows that 69.2% (54) of the respondent agreed that the loan interest rate is high, 52.6% (41) agreed that agricultural loans are not accessible by the poultry farmers in Osun state. Meanwhile, the time to process agricultural loan were said to 1month by 51.5% of the respondent where majority (37.2%) of the respondent identified relative and friends as source of agricultural loan. The study shows 50% (39) of the poultry farmers moved the motion that the loan repayment times are mainly short term. This is in accord with the findings of Aladejebi (2017) that credit from non-institutional sources is more attractive, because there is little or no insistence on collateral security and interest. On the other hand, formal sources of credit had low patronage from the farmers, which may be due to lack or limited presence of

banks and other formal sources of credit in the study area coupled with delay in approval and disbursement of loan, insistence on collateral security, high interest rate and mode of repayment.

Table 2: Showing the characteristics of agricultural loan in the study area

Variable	Frequency	Percent
Interest rate (1= high 0 = low)		
Yes	54	69.2
No	24	30.8
Timely access		
Yes	37	47.4
No	41	52.6
Time to process loan		
< 2 weeks	6	7.7
< 1 month	40	51.5
< 3 months	23	29.5
< 6 months	8	10.1
More than a year	1	1.2
Source of loan		
Microfinance	14	17.9
Relative and friends	29	37.2
Money lender	23	29.5
Cooperative	12	15.4
Banks		
Repayment time of loan		
Short term	39	50.0
Medium term	24	30.8
Long term	15	19.2
Total	78	100.0

Source: Field Survey, 2019

Income Analysis by Credit Utilization

Table 3 shows the comparison of farmer with credit facility and farmer without credit facility vis-à-vis the utilization, the study posits that farmer with high volume of credit facility utilize to credit facility better than little volume of credit facility, 60% of the respondent used the credit facility to expand their farm.

Table 3: Income analysis by credit utilization

	Average Income (₦)	Average Income per ha (₦)
Farmer with credit utilization	85,574	41,545
Farmer without credit utilization	69,829	36,420

Source: Field Survey, 2016

Purpose of utilization	Frequency	Percent
To start a new farm	23	25.21
To expand farm	57	60.0
For other purposes	15	15.79

Source: Field Survey, 2016

Factors Affecting Access to Credit

Table 4 revealed the maximum likelihood estimate of the parameters and the effect of independent variables on the probability of access to credit and utilization required for poultry business was analysed. All the variables therefore were decided to be included in the model for analysis. For this study, the dummy variable 1 denotes that the farmer is considered to have had access to credit and utilized it for the poultry business. The dependent variable is either access or no access to credit and the logit model was used to estimate the determinants of the selected independent variables on access to and utilization among poultry farmers in the study area. The result showed that educational status tested negative on the influence of access to credit as against the a priori expectation earlier stated at 5% significance level. This is in agreement with Wainaina *et al.* (2012) that the higher educational attainment may reduce the likelihood of participating in farming. The income level tested positive to the access to credit. This indicates that a farmer with high farm income level is likely to have access to credit. This result might be predicated on the fact that any source of capital will desire to ensure repayment as at when due.

The result of the model also showed that the coefficient of the interest rate negatively influenced access to credit. This depicts that the interest rate is favourable and farmers will be willing to demand for more credit. This result is in line with the study conducted by Otunaiya *et al.*, 2015 which showed that the coefficient for the variable was negative and significant at the 1 percent level which is in accordance to

the a priori expectation that as the interest rate increases the volume of loan demanded by farmers' decreases.

The result also showed that labour cost positively influenced access to credit. This shows that farmer incurred high cost of labour is more likely to be eager to identify different sources of capital around them and also have access to them. This result is in line with the study done by Isitor *et al.*, 2014 which reported that labour costs constitute a significant portion of the cost of production (Udoka *et al.*, 2016), therefore, as farmers increase scale of production, more funds will be required to hire labour.

The result of the model showed that the coefficient of the cost of feeds positively influenced access to credit which is in accordance with the a priori expectation earlier stated at 5 per cent significance level. A farmer that incurred high cost of feeding is likely to have access to credit and more likely to know different sources of capital around them and also have access to them. This corroborates Kalla *et al.* (2011) and Essien and Arene (2014) which independently shows the negative influence of high cost of feed on net farm income realizable from poultry production.

The result also showed that sources of capital positively influenced access to credit at 5 per cent significance level. The model revealed that source of capital contributed 41.1 per cent to having access to credit. This implied that the type of source of capital whether formal or informal is of great importance to having access to credit. The membership of association found to be positively significant. This posits that the ability to be a member of an association increases the access to agricultural loan by poultry farmer.

Table 4: Factors Affecting Access to Credit

Variables	Coeff.	Standard error	Z	P> z
Household size	0.2150698	0.3459083	0.62	0.534
Educational status	-0.3145445	0.1659875	-1.89	0.053**
Farming experience	0.844854	0.1083888	0.78	0.436
Farm income	9.69e-07	5.45e-07	1.77	0.039**
Interest rate	-0.7039213	0.194319	-3.62	0.000***
Contact with extension agents	0.5018707	1.047188	0.48	0.632
Labour cost				
Cost of feeds	0.0000656	0.0001084	0.61	0.054**
	0.0766070	0.035276	2.17	0.033**
Sources of credit	4.106138	1.490879	2.75	0.006**
Membership of association				
Cons	0.2001822	0.100237	2.48	0.009**
	-0.0919019	6.733253	2.32	0.020

Source: Field Survey, 2019

Determinant of Credit Utilization

Table 5 presented the determinant of credit utilization among poultry farmers. Using the linear, semi log and the Cobb Douglas methods, the linear method was chosen as it fits well as the lead equation at 10% significance. The result shows that the adjusted R square is 0.4505. This indicated that the estimated independent variable explained 45% of the variations in determinant of credit utilization among poultry farmers in the study area while 55% are exogenous to the system. The explanations and effect of the different variables such as farm income, number of years spent in school, number of birds and cost of feeds are explained as follows: The regression result above shows that the coefficient of the farm income was positive (18876.47) and significant. This implies direct relationship between farm income as determinant for credit utilization among poultry farmers. The implication means that farmers whose farm income increases in a particular farming season vis-à-vis credit facilities has utilized the credit facilities procure for that particular farming season and increases the volume of credit in the next season so as to earn more income. It therefore follows that if farmers' income increases by 1 naira, the volume of credit will increase by an amount equal to 18876.47. The result shows that the coefficient of number of years spent in school is negative (-2564.688) as against the a priori expectation stated earlier. This follows that there is an inverse relationship between credit utilization determinant and the educational status. The fact that a farmer is highly literate does not guarantee the utilization of credit facilities. The result also revealed that the coefficient of the number of birds is negative (-18680.75) and significant. This implies

that the number of birds in a poultry farming has an indirect relationship as determinant of credit utilization. The fact that a farmer has a small flock size does not stop the farmer utilizing the given credit facilities. The result showed that the coefficient of the cost of feeds is negative (0.076607) and significant. This implies inversely relationship between cost of feeds as against the credit utilization. The implication is that farmers that incurred cost of feed at a particular time will determine the utilization of credit facilities procured for poultry farming that is the increase in cost of feed will result in less or not utilization of credit facility (Isitor *et al.*, 2014).

The source of credit facility and interest rate tested negative and significance as against the determinant of credit utilization. This posits that the credit package source and high interest rate will result to low utilization of credit facility.

Table 5: Determinant of credit utilization

Credit utilization	Coeff..	Std. Err	T	p> t
Farm income	18876.47	7418.137	2.54	0.013**
Off farm income	25629.33	5129.003	3.78	0.005**
Educ status	-2564.688	8165.041	-0.31	0.754
Number of birds	-18680.75	7434.913	-2.51	0.014**
Age	4520.671	3210.206	1.41	0.164
Household size	15200.28	17504	0.87	0.388
Gender	1.548120	0.02711	1.79	0.612
Labour cost	-1.517838	5.290138	-0.29	0.775
Cost of chicks	-1.997272	.2392583	-0.83	0.407
Cost of feeds	-0.076607	0.0352763	2.17	0.033**
Extension	-0.72157	0.122781	0.87	0.921
Source of credit	1.65105	1.15296	2.29	0.027**
Interest rate	-0.0518	0.00719	1.78	0.039**
Constant	-296387.6	169120.8	-1.75	0.084

Source: Field survey, 2016

Adj R-squared = 0.4505

Y = amount used for poultry business

Conclusion And Recommendation

It can be concluded that interest rate, cost of feeds and labour cost had positive significant effect on farmers' access and utilization of loan in the study area hence, the impact of credit/loan in poultry farming enterprises cannot be underestimated on the overall production. Therefore, there should be subsidy on the price of feed and other feed ingredients for feeding poultry. Financial institutions should also be considerate on the part of the farmers by lowering the cost at which they give out loan to them.

Declarations

Availability of data and materials:

The data and materials used for this research are available at any time required.

Competing interests:

There are no conflicting or competing interest whatsoever in or about this research work.

Funding:

There is no funding available for this research.

Authors' contributions:

Afolayan A. F.: Conceptualization, Investigation, Writing – original draft, Writing – review and editing

Omisope E. T.: Resources, Writing - review and editing.

Ajayi A. M.: Writing - original draft, Writing - review and editing, Resources

Adeoti S. O.: Resources, Writing – review and editing

Ogunjinmi O. F.: Writing - original draft, Writing - review & editing.

Kofoworola O.O.: Data collection and investigation

Acknowledgements:

The authors wish to acknowledge the scholarship support of Professor Taiwo Alimi towards this academic endeavour. The authors also wish to appreciate Professor Ayobami T. Salami of the Institute for Sustainable Development, First Technical University, Ibadan, Nigeria for the mentorship and inestimable support given towards the success of this work.

References

- Adebayo O. O. and Adeola R. G. (2017). Socio-Economics Factors Affecting Poultry Farmers in Ejigbo Local Government Area of Osun State, *Journal of Human Ecology Volume 18, 2005 - Issue 1*
- Afolayan A. F. (2017). Economics and Gender differentials of rice production in Southwestern state, Nigeria, Unpublished PhD Thesis submitted to Obafemi Awolowo University Ile Ife
- Akintunde, O.K., Coster, A.S., Nwigwe, C.A. and Agboola, T.O. (2020). An analysis of factors influencing access to credit by poultry egg farmers in Southwestern, Nigeria. *Nigerian J. Anim. Sci.* 2020 Vol 22 (2):204-212 (ISSN:1119-4308) (<https://www.ajol.info/index.php/tjas>)
- Akinwunmi, J.A. (1988). Credit Guarantee as a strategy for Agricultural Financing in Nigeria, unpublished paper presented at the Central Bank of Nigeria Workshop in Abuja.
- Aladejebi O. J., Fakayode S. B., Oronti O. O. and T. P. Sani (2019). Post Economic Recession and Agricultural Production in Nigeria: A Case Study of Small Scale Poultry Egg Farming, 6th African Conference of Agricultural Economists, Invited paper presented at the 6th African Conference of Agricultural Economists, September 23-26, 2019, Abuja, Nigeria
- Ammani Aliyu A. (2012). An Investigation into the Relationship between Agricultural Production and Formal Credit Supply in Nigeria. *International Journal of Agriculture and Forestry*, 2(1): 46-52 DOI: 10.5923/j.ijaf.20120201.08
- ASL 2050 (2018). Livestock production systems spotlight Nigeria. FAO, Rome, Italy
- Ayanrinde F. A., Oyewole S. O., Ayanrinde O. A., Oyewole A. L., and M. O. Oguntade. (2020). Economic Analysis of Feed Users among Livestock Farmers in Afijio Local Government Area of Oyo State, Nigeria. *International Journal of Science, Engineering & Environmental Technology (IJOSEET)*, 5(10): 80-86, 2020
- Balogun, O L. and Yusuf S.A. (2011). "Determinants of demand for microcredit among the Rural Households in South West states, Nigeria". *Journal of Agriculture and Social Sciences* 7(2) 41-48.
- Central Bank of Nigeria (CBN) (2005). Micro Finance Policy, Regulatory and Supervisory Framework for Nigeria. CBN, Abuja P.2.
- Central Bank of Nigeria (CBN) (2010). Monetary, Credit, Foreign Trade and Exchange Policy Guidelines for Fiscal Years 2010/2011 (Monetary Policy Circular No. (38) 1-78.
- Egwu P. N., Nnabu B. E., Mbam B. N. and S. U. Nwibo (2020). Credit rationing by deposit money banks and implication on agricultural output in Nigeria, *Global Journal of Agricultural Sciences* 19(1):59-69
- Essien, U. A. and Arene C. J. (2014). Can Access to Informal Credit Markets Improve the Performance of Rural-based Agro-allied Enterprises? Evidence from the Rural Niger Delta Region of Nigeria. *International Journal of Rural Studies*, 21, (1), 13-18

FAO (2020). "Nigeria at a glance | FAO in Nigeria | Food and Agriculture Organization of the United Nations". www.fao.org. Retrieved 2020-11-24

FAOSTAT (2020). Food and Agricultural Organization of the United Nations. www.fao.org/faostat/en/#data/QA

FAO (2020). FAO Statistical Programme of Work 2020–2021. Rome. <https://doi.org/10.4060/ca9734en>

Herrero M., Grace, D., Njuki, J. Johnson, N., Enahoro, D., Silvestri S. and Rufino M. C. (2012). The roles of livestock in developing countries, *Animal* (2013), 7:s1, pp 3–18 & The Animal Consortium 2012

Ike P. C. and Ugwumba C. O. A (2011). "Profitability of Small Scale Broiler Production in Onitsha North Local Government Area of Anambra State, Nigeria". *International Journal of Poultry Science* 10 (2): 106-109.

Isitor, S.U and Babalola, D.A and Obaniyi, K. S. (2014). An Analysis of Credit Utilization and Farm Income of Arable Crop Farmers in Kwara State, Nigeria. *Global Journal of Science Frontier Research: Agriculture and Veterinary* 14 (10). pp. 26-34. ISSN 0975-5896

Iyiola-Tunji A. O. (2015). Evaluation of Crop-Livestock Integration Systems among Farm Families at Adopted Villages of the National Agricultural Extension and Research Liaison Services. *Journal of Agricultural Extension* Vol. 19 (2) December, 2015

Kalla S. M. and Arora A. P. (2011). Impulse Buying: A literature Review, *Global Business Review* 12(1):145-157

Kuye, O. O (2016). Comparative analyses of beneficiaries and non-beneficiaries of bank loan among small-scale cassava farmers in South-South Nigeria (2009-2013). Unpublished PhD thesis submitted to the Department of Agricultural Economics, Management and Extension, Ebonyi State University, Abakaliki, Ebonyi State, Nigeria. pp 19-20.

Kuye O. O., and Ogiri O. M. (2019) Analysis of Factors Influencing Access to Formal Loan Among Small-scale Swamp Rice Farmers in Obubra Local Government Area, Cross River State, Nigeria. *International Journal of Agricultural Economics*. Vol. 4, No. 6, 2019, pp. 307-313. doi: 10.11648/j.ijae.20190406.19

Makun, H. J. (2018). *Dairy production systems in Nigeria*. Presentation delivered at the Technical meeting of Africa Sustainable Livestock 2050, April 2018, Abuja.

National Bureau of Statistics [NBS]., 2010, Harmonized Nigerian Living

Standard Survey. Abuja

National Bureau of Statistics (NBS), (2010), Harmonized Nigerian Living Standard Survey. Abuja

National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF), (2017). Multiple Indicator Cluster Survey 2016-17, Survey Findings Report. Abuja, Nigeria. NBS and UNICEF

Ojo, M. P., and Ayanwale A. B., (2019). Estimating Farm-Level Financing Gap: A Technical Efficiency Approach. *Agricultural Finance Review* 79 (2): 74–191.

Olomola, A., (2018). *Financial Stimulus And Performance of the Commercial Agricultural Credit Scheme (CACs) in Nigeria*, 2018 Conference, July 28-August 2, 2018, Vancouver, British Columbia 277445, *International Association of Agricultural Economists*.

Osabohien R., Mordi A., and A. Ogundipe (2020): Access to credit and agricultural sector performance in Nigeria, *African Journal of Science, Technology, Innovation and Development*, DOI: 10.1080/20421338.2020.1799537

Osabohien R., Adeleye N., and T. De Alwis (2020). Agro-financing and food production in Nigeria, *Heliyon* 6 (2020) e04001

Otunaiya, A.O. (2007). Access to informal credit and its effects on cassava production in yewa division of Ogun state, Nigeria, *Nig. J. Res. Prod.*, 11: 140-148.

Otunaiya, O.A. (2014). *The food security profile of farming households in Rural Areas of Ogun State, Nigeria. climate change, agriculture and food security in Nigeria*. Proceeding of the 14th Annual National Conference of the Nigeria Association of Agricultural Economics 24th – 27th Feb (Pp. 762-768), Federal University of Technology, Akure, Nigeria.

Otunaiya A. O., Adeyonu A. G., and O. M.,Bamiro (2015). Technical Efficiency of Poultry Egg Production in Ibadan Metropolis, Oyo State, Nigeria, *Economics*. Vol. 4, No. 3, 2015, pp. 50-56. doi: 10.11648/j.eco.20150403.1

Oyedele, G. A. and J. O., Akintola (2012). Determinants of access to credit in Nigerian agriculture, *Journal of Development and Agricultural Economics*, 4(10), pp. 275-286, June, 2012

SAHEL (2015). An Assessment of the Nigerian Poultry Sector. <http://sahelcp.com/anassessment-of-the-nigerian-poultry-sector/>. SAHEL 11: 1-3.

Schultz, T. W. (1964). Changing Relevance of Agricultural Economics. *Journal of Farm Economics*, 46(5), 1004. doi:10.2307/1236672

World Bank (2017). Microfinance and Economic Development. Policy Research Working Paper 8252 Development Research Group Finance and Private Sector Development

Team November 2017

Udoka, C. O., Mbat, D. O. and Duke, S. B. (2016). "The Effect of Commercial Banks' Credit on Agricultural Production in Nigeria", *Journal of Finance and Accounting*, 2016, Vol. 4, No. 1, 1-10. DOI:10.12691/jfa-4-1-

STATISTA (2020). <https://www.statista.com/statistics/823561/global-livestock-monitoring-and-management-market-value/> accessed 21/12/2020

Thornton, P. K. (2010). Livestock production: recent trends, future prospects. *Philos Trans R Soc Lond B Biol Sci.*, 365(1554):2853-67. doi: 10.1098/rstb.2010.0134. PMID: 20713389; PMCID: PMC2935116.

Udoka, C. O., Mbat, D. O. and S. B. Duke (2016). "The Effect of Commercial Banks' Credit on Agricultural Production in Nigeria", *Journal of Finance and Accounting*, 2016, Vol. 4, No. 1, 1-10. DOI:10.12691/jfa-4-1-1

Wainaina, P. W., Okello, J. J., and J., Nzuma (2012). *Impact of contract farming on smallholder poultry farmers' income in Kenya*. Paper presented at the 2012 Triennial Conference of International Association of Agricultural Economists: Foz do Iguacu, Brazil.

World Bank (2014). *Business and Livelihoods in African Livestock : Investments to Overcome Information Gaps*. Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/17801> License: CC BY 3.0 IGO.

World Bank (2017). *Microfinance and Economic Development*. Policy Research Working Paper 8252 Development Research Group Finance and Private Sector Development Team November 2017