

## ACCESS TO FINANCE BY POULTRY EGG FARMERS FOR CLIMATE CHANGE ADAPTATION STRATEGIES IN RIVERS STATE NIGERIA

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### Abstract

Accessing adaptation finance is posing a threat to the male poultry egg production in the face of changing climate. The study examined the accessibility of finance for climate change adaptation strategies among male poultry egg farmers in Rivers State, Nigeria. The study relied predominantly on primary data garnered using a set of questionnaire and interview schedule for its analysis. The information was obtained from 60 poultry egg farmers using multistage sampling procedure. Data were analyzed using descriptive statistics, and logit regression model. About 48.3% of farmers were aware of climate change finance about 45% of the poultry egg farmers actually received financial support on climate change. The mean level of educational attainment of the poultry egg farmers was 13.57 years, with mean of stock size of 1780 birds and mean of annual income of ₦3,195,860.00. The logit regression model results showed that age, household size, farming experience, stock size, educational level and access to climate change information are the determinants of poultry egg farmers' access to climate change finance. It is therefore, pertinent and worthy to note that awareness guarantees accessibility of climate change finance; and accessibility could guarantee utilization of appropriate adaptation strategies (such as planting of plantain/banana round the pen, change poultry bird feeds among others) in poultry egg farming. The study, therefore, recommends that National agencies like Special Climate Change Unit (SCCU) should create awareness and sensitize the poultry farmers to participate in programmes that address accessibility of finance for climate change adaptation in the country.

**Keywords:** Accessibility, Adaptation, Climate Change, Finance, Poultry

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### Introduction

Livestock portray and play a significant performance in the agricultural sector in developing countries, and the livestock sector contributes 40% to the agricultural gross domestic product (GDP) (Food and Agriculture Organization [FAO], 2009). Worldwide demand for foods of animal basis is increasing and it is obvious that the livestock sector will require enlargement (FAO, 2009). Poultry farming is one of the major livestock. Poultry production is a main supplier of protein, which has strengthened poultry farmers to guarantee a way of surviving and livelihood (Alade & Ademola, 2013). The main poultry birds reared are layers, broilers and cockerels, which are susceptible to climatic instability. Most poultry farmers in Rivers State Nigeria operate on a small-scale, while medium and large-scale poultry farmers are very few.

The practice of producing poultry food involves resources that could be natural or unnatural (artificial). Natural resources involve all the components and elements that are endowed universally. Those that are mostly and practically required for poultry production are land, water, sunshine, air, temperature, etc. Artificial resources include labour, capital and

management, which are supplied and determined by man (Oyekale, Bolaji & Olowa, 2009). Amidst the natural resources, climate is the influential and paramount factor that determines poultry production (Oyekale *et al.*, 2009). Climate is the average weather conditions of a given area over a longer period. A description of a climate includes information on prevailing weather conditions of such an area, such as temperature, rainfall, air pressure, humidity, sunshine, cloudiness, and winds. Poultry farming like other aspects of the economy is affected by climate change (Oyekale *et al.*, 2009). Hence, change in the climate will alter poultry production.

Climate change imperils the viability and continuity of poultry production systems worldwide and the fact that it is a natural phenomenon beyond man's control necessitates adaptation. Therefore, adaptation to, and mitigation of the damaging effects of acute climates has played a huge role in fighting the climatic impact on poultry (Sejien, Bhatta, Soren, Malik, Ravindra, *et al.*, 2015). Adaptation is the modification and acclimatization in natural or human strategy in reaction to the real or anticipated climatic variation and their possible effects, which alleviate damage

opportunities (Intergovernmental Panel on Climate Change [IPCC], 2001). It includes knowledge to control and manage new uncertainty and increasing resistance in the face of climatic change confronting poultry production. This study would want to ascertain how access to, financing climate change adaptation strategies affects male poultry egg farmers in Rivers State Nigeria. Rivers State involved in poultry farming, and birds reared include hens for laying eggs, broilers, cockerels, turkeys quail and others. The study will go further to see how these can help in policy formulation on climate change adaptation strategies and poultry production in Nigeria and Rivers State in particular.

Climate projection and prediction is an indispensable tool for agricultural production decision making. Poultry farming is a very essential operation in food production throughout the country which, serves as livelihood to the poultry farmers. It is evident that climate change has effects on poultry production pattern (Deeb & Cahaner, 2002). Measures to lessen the effects of climate change on poultry farming can only be effective and efficient with understanding and knowledge of susceptibilities of climate change adaptation strategies to tackle the specific requirement of male poultry farmers (Babugura, Mtshali & Mtshali, 2010 and United State Agency for International Development [USAID], 2010).

Attention to accessibility of finance has not been considered in climate change investigation, programming, project, national policy-making and in the international dialogue and discussions on adaptation strategies, leaving a gap in knowledge. It is therefore imperative that accessibility of climate change adaptation strategies finance among male poultry egg farmers in Rivers State Nigeria be empirically determined to bridge the existing knowledge gaps. The specific objectives of the study are to:

- (i) describe the socio-economic characteristics of poultry egg farmers in the study area;
- (ii) identify institutions that support financing climate change adaptation strategies of poultry farmers in the study area;
- (iii) identify the different climate change adaptation strategies adopted by the egg producers in the study area; and
- (iv) determine the factors affecting access to climate change financing of male poultry farmers in the study area.

### Materials and Methods

The study was conducted in Rivers State. Rivers State is located on the southern part of Nigeria. According to Rivers *Encyclopædia Britannica* agricultural production of the Rivers State involved in poultry farming, and birds reared include hens for laying eggs, broilers, cockerels, turkeys quail and others. There are twenty-three (23) Local Government Areas (LGAs) in the State. According to Rivers State Agricultural

Development Programme RSADP (2000) there are three (3) agricultural zones in the State. Rivers State lies between Longitudes 6°50'E and 7°00'E and Latitudes 4°45'N and 5°70'N with the sphere of 11,077km<sup>2</sup> (4,277mi<sup>2</sup>), which makes it the 26<sup>th</sup> largest State in Nigeria (Niger Delta Regional Development Master Plan [NDRDMP], 2006). According to National Bureau of Statistics [NBS] (2011) estimated the State population to be 11,512,656 as at 2010. The inland region of Rivers State constitutes tropical rainforest close to the coastline. The average monthly temperature is between 25–28°C and the average yearly rainfall is between 2032mm inland region to 3048mm towards the coastline (Niger Delta Regional Development Master Plan [NDRDMP], 2006). Relative humidity hardly declines below 60% and vary between 82.23% minimum and 94% maximum for most of the year as cited by Amadi1, Udo and Udoimuk, (2015). Rivers State share boundary in the South with Atlantic Ocean, towards the North share boundaries with Imo and Abia States, towards East with Akwa-Ibom State and to the west with Bayelsa and Delta States (NDRDMP, 2006).

Multistage sampling procedure was used in the selection of respondents (poultry egg farmers). Firstly, two (2) agricultural zones were purposively selected from the three (3) zones, considering the two dominant poultry egg production zones. Agricultural zone one (I) and three (III) were selected. Secondly, three (3) Local Government Areas (LGAs) were randomly selected from each of the two agricultural zones, making six (6) LGAs. According to Rivers State Agricultural Development Programme RSADP (2000) Zone one (I) has eight (8) LGAs and Zone three (III) has seven (7) LGAs. Selected LGAs from zone one (I) are Obio/Akpor, Eleme and Oyigbo. Selected LGAs from zone three (III) are Ikwerre, Emohua and Etche. Thirdly, two (2) communities that were dominant in poultry egg production were purposively selected from each LGA, making twelve (12) communities. Lastly, five (5) male poultry egg farmers were purposively selected from each community, this purposive selection is because not all poultry farmers engaged in egg production and also not all those that involved in egg production do it commercially some keep only for family consumption. Male farmers are less risk averse to consider seeking finance to support their poultry enterprise. The possibility that the male farmers are in a better position to pay premiums on insurance cannot be over emphasized, they have the possession of lands and other capital assets that could serve as securities. Making a sample size of sixty (60) male poultry egg farmers in the study area.

Primary data were collected through the use of questionnaire and interview schedules. Data for this study were analyzed using both descriptive and inferential statistics. The descriptive statistical tools include mean, percentages, and frequency; while the inferential statistics is the use of logit regression. Objectives (i) and (ii) were achieved using descriptive statistics, namely frequency, percentage, and mean. Objective (iii) was achieved using inferential statistics, namely logit regression.

## Access to Finance by Poultry Egg Farmers for Climate Change Adaptation

The logit model is expressed as;

$$f(\rho) = \beta_0 + \beta_1 X_1 + e \quad (1)$$

Where p = dependent variable

$\beta_0$  = constant

$\beta_1$  = coefficient

$X_1$  = independent variable

$e$  = residuals

Binary logit regression model specification;

$$\text{Logit}[\theta(x)]_i = \text{Log} \frac{\theta(x)}{1-\theta(x)} = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_{9i} + \beta_{10} X_{10i} + \beta_{11} X_{11i} \quad (2)$$

$i = 1, 0;$

Where:  $i = 1, 0;$

1 = accessed

0 = did not access

$\text{Logit}[\theta(x)]_i$  = is logit binary outcome of accessing finance by the male poultry egg farmer

$\beta_0$  = constant

$\beta_1 - \beta_{11}$  = coefficients

$X_{1i} - X_{11i}$  = independent variables

Where:  $X_{1i} - X_{11i}$  = independent variables are

$X_{1i}$  = Age of respondent (in years)

$X_{2i}$  = Household size (in number)

$X_{3i}$  = Farming experience (in years)

$X_{4i}$  = Stock size (number of birds)

$X_{5i}$  = Educational level (years of schooling)

$X_{6i}$  = Annual income (in naira)

$X_{7i}$  = Member of farmer organization (Dummy: 1 = member; 0 = non-member)

$X_{8i}$  = Access to climate change information (Dummy: 1 = access; 0 = non-access)

$X_{9i}$  = Awareness of external finance of climate change adaptation strategies (Dummy: 1 = yes; 2 = no)

$X_{10i}$  = Extension contacts (number of visits per year)

$X_{11i}$  = Landownership (Dummy: 1 = yes, 2 = no)

## Results and Discussion

The socioeconomic characteristics of the poultry egg farmers are presented in Table 1:

**Table 1. Socioeconomic characteristics of poultry egg farmers**

Variables	Frequency	Percentage
<b>Age (in years)</b>		
18 – 29	9	15.0
30 – 41	18	30.0
42 – 53	16	26.7
54 – 65	17	28.3
Mean	44.03	
<b>Marital status</b>		
Single	14	23.3
Married	43	71.7
Widow/Widower	3	5.0
<b>Level of education</b>		
0 (No formal education)	4	6.6
Primary 1 – 6 years	4	6.7
Secondary 7 – 12 years	17	25.3
Tertiary 13 and above	35	58.3
Mean	13.57	
<b>Household size</b>		
1 – 3	10	16.6
4 – 6	32	53.3
7 – 9	17	27.4
10 and above	1	1.7
Mean	6	
<b>Farmer association</b>		
Yes	15	25.0
No	45	75.0
<b>Primary occupation</b>		
Poultry	27	45.0
Civil servant	6	10.0
Trader	6	10.0
Artisan	11	18.3
Students	3	5.0
Clergy	2	3.3
Public servant	5	8.3
<b>Farming experience (in years)</b>		
1 – 5	28	46.6
6 – 10	16	26.6
11 – 15	5	8.4
16 – 20	5	8.4
21 – 25	3	5.0
26 – 30	2	3.3
31 and above	1	1.7
Mean	9.17	
<b>Land ownership</b>		
Yes	44	73.3
No	16	26.7

<b>Stock size of laying birds</b>		
200 – 1000	24	40.0
1001 – 2000	19	31.7
2001 – 3000	9	15.0
3001 – 4000	4	6.6
4001 – 5000	2	3.3
5001 – 6000	1	1.7
6001 and above	1	1.7
Mean	1780	
<b>Annual income on poultry egg production (in ₦,000,000)</b>		
1. and below	13	21.6
1.1 – 5.	41	68.3
5.1 -10.	3	5.0
10.1 – 15.	1	1.7
15.1 – 20.		
20.1 – 25.	1	1.7
25.1 and above	1	1.7
Mean	3,195,860	
<b>Access to climate change information</b>		
Yes	50	83.3
No	10	16.7
<b>Awareness on financing climate change adaptation strategies</b>		
Yes	29	48.3
No	31	51.7
<b>Financial support received on climate change adaptation strategies</b>		
Yes	27	45.0
No	33	55.0
<b>Extension contacted in last one year</b>		
Yes	5	8.3
No	55	91.7
Total	60	100

Source: Field Survey, 2018.

Table 1 shows the results the socioeconomic characteristics of the male poultry egg farmers. From the results, 30.0% of the male poultry egg farmers in the study area ranged between 30 – 41 years, about 28.3% ranged between 54 – 65 years, with the mean age of 44.03 years. This implies that the majority of the males poultry egg farmers were middle aged who involved in poultry farming and were young and full of energy, vivacious and dynamic, and are more prone to adopt new innovations and access financial support. This also shows that the poultry egg farmers in the study area were within the economically vigorous age bracket. These are predominantly young persons, who could afford to invest into the poultry egg farming enterprise. Poultry farming is known to be characterized and described by high risks such as epidemic of disease (Alade & Ademola, 2013), burglary and natural disasters like fire outbreak, flood, heat, cold and the like.

The results show that the majority of married (71.7%) males were involved in poultry egg farming. This is attributed to the fact and reality that married people required more finance to fund the poultry farming in

order to generate more income to support the family needs. This finding agrees with Oduwaiye, Ogunlade, Omotesho, Oladipo and Omopariola (2017) who reported 83.2% married respondents among poultry farmers in Kwara State, Nigeria. About 58.3% of the poultry farmers had tertiary education with a mean of 13.57 years. This clearly pointed to the fact that the poultry egg farmers were educated enough to keep poultry farming records activities. This exposure to formal education by the poultry farmers could really help to improve accessibility to climate change adaptation strategy finances, which would aid productivity of poultry farming. This implies that the majority of the poultry farmers in the study area had tertiary education. This finding agrees with the results of Ojo (2003) who stated that poultry egg production requires high academic proficiency and skills, and Oduwaiye *et al* (2017) who reported that 97.6% of the farmers had tertiary education among poultry farmers in Kwara State Nigeria.

From the results, about 53.3% had between 4 – 6 household size, with mean of six (6) members. This finding agrees with the report of Akintunde (2015) and

Adeyonu, Oyawoye, Otunaiya and Akinlade (2016) who obtained a mean of five household size among poultry farmers in Southwest Nigeria and Oyo State Nigeria respectively. The majority (75%) of male poultry egg farmers were not members of any poultry farmers' association. This implies that the majority of poultry farmers in the study area could be denied of the benefits accruable to members, because it is expected that farmers' association could enhance poultry farmers' accessibility to climate change adaptation strategies funds to improve their production and eliminate financial losses due to climate change phenomenon. This finding agrees with the report of Oladeji (2011) who reported that 83.3% of the poultry farmers that did not belong to any poultry farmer association in Oyo State Nigeria.

The results shows that about 55% engaged in poultry egg farming on part time bases. This result agrees with Tikwe, Simon, and Gbana (2015) that reported that 84.2% of the poultry farmers took poultry farming as their secondary occupation among the poultry farmers in Jalingo Local Government Area, Taraba State Nigeria. About 46.6% had poultry farming experience between 1 – 5 years, with mean of 9.17 years. This could contribute to the accessibility of financing to climate change adaptation strategies. This result agrees with the findings of Oduwaiye *et al* (2017) that reported mean poultry farming experience of 9.45 years among poultry farmers in Kwara State Nigeria. Expectedly, the more the number of years of the poultry farmers' experiences in poultry farming, the better the ability to adapt to climate change in poultry enterprise productivity.

Male poultry egg farmers (73.3%) owned land for their farming operations. About 26.7% acquired, the poultry farm lands either by rents, leased, inherited or family lands. This means that the farmers had poultry farmland as asset to use as collateral in accessing finance for adaptation strategies. This is in accordance with Menong, Mabe and Oladele (2013) as cited by Oduwaiye *et al* (2017) that it is better for livestock production to own land because farmers' management decisions will not be subjected to the notions and vagaries of the landowners. About 40% stocked between 200 – 1000 laying birds with the mean of

1780. Poultry farms can be categorized based on stock size into small scale, which ranges from 1 – 1000 birds, medium scale which range from 1001 – 3000 birds and large scale which is 3001 birds and above (Ikheloa & Inedia, 2005 as cited by Oduwaiye *et al* 2017). Therefore, majority of the poultry farms in the study area could be categorized as small scale and medium scale. About 68.3% had annual income between ₦1,100,000.00 – ₦5,000,000.00 with the mean annual income of ₦3,195,860.00.

Majority (83.3%) of the poultry farmers had access to information on climate change. The farmers could be more prone to have access to financing climate change adaptation strategies because of information. This finding agrees with that of Oladeji (2011) who reported that 50.9% had access to information on climate change among poultry farmers in Oyo State. About 48.3% of poultry egg farmers were aware of financing climate change adaptation strategies, majority of the farmers were not aware of financing climate change adaptation strategies which could affect their production. Nevertheless, it is worthy to note that awareness guarantees accessibility of climate change finance. About 45% of the male poultry egg farmers actually received financial support for adaptation strategies. It is therefore a great value to note that accessibility of financing climate change could guarantee utilization of appropriate adaptation strategies in poultry egg farming. This finding agrees with that of Chah, Attamah and Odoh (2018) that reported about 65.7% of males that had access and received credit support among livestock farmers in Nsukka Agricultural Zone of Enugu State, Nigeria. It also agrees with Udensi, Essien, Alobari and Naenwi (2014) that reported about 77.0% males among rural farmers in Cross River State that had access to financing scheme.

Majority (91.7%) of the male poultry egg farmers had no contact with the extension services in the study area within the past one year. The extension services are very essential source of new technology, information on poultry farming and on climate change. Therefore, contact with the extension services could intensify in utilizing some poultry adaptation strategies during climatic variability, even in accessing financial support for the adaptation strategies.

Table 2. Distribution of Poultry Egg Farmers According to the Institutions that Support Financing Climate Change Adaptation Strategies in the Study Area

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
Government Agencies (NASPA -CCN, SCCU)	15	25.0
Non-Governmental Organization (NGOs)	4	6.7
Financial Institutions	5	8.3
Insurance Companies	3	5.0
Individuals (Philanthropists)		
No support	33	55.0
Total	60	100

Source: Field Survey, 2018.

The results of data analysis on institutions that support financing climate change adaptation strategies of the poultry farmers in the study area are presented in Table 2. About 25% of the poultry egg farmers received this support from Governments agencies (like National Adaptation Strategy and Plan of Action on Climate Change for Nigeria [NASPA-CCN], Federal Ministry of Environment Nigeria, Nationally Strategic Climate Change Trust Fund [NSCCTF], Special Climate Change Unit [SCCU] among others). This agrees with International Federation of Red Cross and Red Crescent Societies [IFRC] (2013) that stated that cooperatives societies could access some of the finance from national bodies directly because usually the funds are channeled through national governments from international organizations to cooperative societies

where individuals can easily have access to the funds. About 6.7% farmer received from NGOs as well. About 8.3% of the poultry farmers received from financial institutions and about 5% of the poultry egg farmers received financial support from insurance companies. This suggests that these institutions actually have financial support for climate change adaptation strategies. However, majorities (55%) of the poultry farmers were not aware and those that were aware could not access it. This could be due to the inability of the egg producers to form egg farmers group/association. This finding is in line with IFRC (2013) who stated that funding of climate change adaptation strategies comes mostly from national finance treasuries and less from other private sectors.

Table 3. Different climate change adaptation strategies adopted by the egg producers in the study area

Adaptation strategies adopted Variables	Yes		No	
	F	%	F	%
Planting of plantain/banana round the pen	51	85	9	15
Use of organic drugs	23	38.3	37	61.7
Involvement of farmer in off-farm job	37	61.7	23	38.3
Utilization of insurance policy	14	23.3	46	76.7
Change poultry bird feeds brand/composition	53	88.3	7	11.7
Change poultry bird breeds	47	78.3	13	21.7
Reduction of stock size of poultry bird	15	25	45	75
Construction of pipe over the roof of the pen as cooling devises	5	8.3	55	91.7

Source: Field Survey, 2018.

Table 3 showed the different climate change adaptation strategies adopted by the egg producers in the study area. Majority (85%) of the poultry egg farmers planted plantain/banana around the pen to cool the pen especially during heat period; sales of the plantains/bananas could also increase the income of the farmers. This indicates that the farmers understand the essence of cool pen environment for laying birds. This finding agrees with Alade and Ademola (2013) reports among poultry farmers in Oke Ogun Area of Oyo State that about 58.3% plant banana/plantain around their pens. About 38.3% use organic drugs which have not been widely used by most poultry farmers. About 61.7% of the poultry egg farmers involved in off-farm job. This finding agrees with Tikwe *et al* (2015) report among poultry farmers in Jalingo Local Government Area Taraba State Nigeria that about 82.8% poultry egg farmers were involved in off-farm job.

Majority (76.7%) of the poultry egg farmers did not insured their poultry farms. This could be due to lack of knowledge on the benefits attached to insurance policy. This finding agrees with Akintunde (2015) that reported 11.9% poultry farmers that insured their poultry farms in Southwest Nigeria. About 88.3% of the poultry egg farmers change poultry bird feeds brand/composition. This implies that the farmers understand the importance of feeds in production. This is in agreement with Hoffmann (2008) that stated that adaptation strategies is not only the acclimatization of poultry bird to heat, humidity and wind speed only but also their capability to stay alive, grow and produce in a situations of deficient nutrition, parasites and diseases. Majority (78.3%) of the poultry egg farmers change their poultry bird breeds as a way of adaptation. This is in agreement with IFAD (2009) who stated that selection of large breeds of birds instead of small for better production.

Table 4. Binary Logit Regression Result of the Factors Affecting Access to Financing of Climate Change Adaptation Strategies by Male Poultry Egg Farmers in the study area

Variables	Odds Ratio	Std. Error	T-ratio
Constant	3.234345	6.946258	0.4656
Age (X <sub>1</sub> )	0.9820029	0.040023	24.5360***
Household size (X <sub>2</sub> )	0.8692498	0.2090157	4.15878***
Farming experience (X <sub>3</sub> )	0.9433887	0.0671414	14.0508***
Stock size (X <sub>4</sub> )	0.9999792	0.0003464	2886.78***
Educational level (X <sub>5</sub> )	0.9358845	0.0724774	12.9128***
Annual income (X <sub>6</sub> )	1.00	2.32e-07	-0.4310
Member of farmer's association (X <sub>7</sub> )	3.32277	3.050078	1.0894
Access to climate change information (X <sub>8</sub> )	0.2099801	0.2213454	39.0193***
Awareness of financing climate change (X <sub>9</sub> )	2.139165	1.723377	1.2413
Extension contacts (X <sub>10</sub> )	1.106815	0.7917395	1.3979
Land ownership (X <sub>11</sub> )	5.441421	5.270277	1.0324

Log likelihood = -28.554597; Pseudo R<sup>2</sup> = 0.2523; Prob>  $\chi^2$  = 0.0564; LR  $\chi^2$  (11) = 19.27\*\*\*, \*\*\*, \*\*, and \* = Significant at 1%, 5%, and 10% respectively  
 Chi-square =  $\chi^2$ ; Number of observation = 60.

Source: Field Survey, 2018.

Table 4 showed the results of the binary logistic regression (logit) model of factors affecting access to financing climate change adaptation strategies by the male poultry egg farmers. The results, showed that amongst the 11 variables, only six (6) variables that significantly affect male poultry egg farmers' accessibility to financing climate change adaptation strategies. The variables are age, household size, farming experience (in years), stock size (number of birds), educational level (years of schooling) and access to climate change information.

The Pseudo R<sup>2</sup> value was 0.2523, which is the proportion of the whole outcome variable explained by the regression model. This implies that about 25.23% of the changes that occur in the dependent variable are mutually explained by the independent variables. The Log likelihood values for the model were significant and thus validating the fitness of the model. This connotes that the independent variables were essential explanatory and clarifying factors of the deviations in the probability of access to financing climate change adaptation strategies among poultry egg farmers in the study area. The logistic regression model gave LR Chi-square ( $\chi^2$ ) value of 19.27\*\*\* which was statistically significant at 1% level. This precisely and scientifically means that at least one of the logit coefficients (odds ratios) of the explanatory variables is not equal to zero. Confirming that the models reliable fit the data. This finding agrees with Rayasawath (2018) that reported significant Chi-square in household succession in agricultural occupation in Nakhon Ratchasima province, Thailand.

Age is statistically significant at 1%. This implies that 1% increase in the year of the poultry farmer results in 0.982% increase in the odd of the access to financing climate change adaptation strategies. This means the older the farmer gets the more access to financing and the more financing institutions are convenient with them. This finding agrees with Oduwaiye *et al* (2017) that reported that age was significant among poultry farmers in Kwara State.

Household size is statistically significant at 1%. This implies that 1% increase in the household size of poultry farmer results in 0.869% increase in the access to financial climate change adaptation strategies in the study area, *ceteris paribus*. This indicates that larger household size could utilize finance effectively since the household members could provide or serve as labour. This finding agrees with Akanni (2007) that reported that household size was significant among small-scale poultry business in South Western Nigeria. Farmers' experience is statistically significant at 1% with an Odds Ratio of 0.9433887. This signifies that 1% increase in the farming experience of the poultry egg farmers' results in 0.943% increase in the access of financing climate change adaptation strategies in the study area. This finding agrees with Akintunde (2015) and Oduwaiye *et al* (2017) that reported that farming experience was significant among poultry farmers in Southwest Nigeria and Kwara State Nigeria respectively.

Stock size is statistically significant at 1% and an Odds Ratio of 0.9999792. This signifies that 1% increase in the stock size of poultry bird of the farmer results in 0.999% increase in the access of financing climate change adaptation strategies in the study area. Thus, poultry farmers that possess large stock of bird have a higher possibility and prospect of access to financing climate change adaptation strategies than their counterparts with smaller stock size. This finding agrees with Oduwaiye *et al* (2017) and Akintunde (2015) that reported that stock size was significant among poultry farmers in Kwara State and Southwest respectively. Year spent in acquiring formal education is statistically significant at 1% and increase the Odds Ratio of 0.9358845 in favour of access to financing climate change adaptation strategies by 0.935%. This implies that the longer the years of poultry farmers spent in school, the more enlightened they are in understanding the value of such finance accessibility. Thus, educated people have access to information and

innovations that could better their poultry farming during climatic challenge. This finding agrees with Oduwaiye *et al* (2017) and Alade and Ademola (2013) that reported that education were significant among poultry farmers in Kwara State and Oke Ogun Area of Oyo State Nigeria respectively.

Access to climate change information is statistically significant at 1%. This indicates that access to climate change information, results in 0.209% increase in the access to financing climate change adaptation strategies by the poultry farmers in the study area, *ceteris paribus*. This access to such information by the poultry farmers will increase adaptation strategies and access to the financial support.

### Conclusion and Recommendation

The descriptive statistics and logit regression model were employed to estimate the factors affecting male poultry farmers' accessibility of financing climate change adaptation strategies in Rivers State, Nigeria. The study revealed that the majority of male poultry egg farmers could not access the funds available for climate change; which led to low productivity in which some were out of the enterprise as a result. Increase in awareness and accessibility of climate change funds could have a positive effect on poultry egg farming. It is therefore, pertinent and worthy to note that awareness guarantees accessibility of climate change finance; and accessibility could guarantee utilization of appropriate adaptation strategies in poultry egg farming.

From the findings, it is therefore recommended that:

- i. The level of awareness of the poultry egg farmers in the study area on financing climate change adaptation strategies is inadequate; as a result they could not access the funds available for climate change adaptation strategies. Therefore, there is need to create awareness and sensitize the male poultry egg farmers to participate in programmes that address accessibility of finance for climate change adaptation in the country;
- ii. The national agency like Nigeria Climate Action Network (NCAN), Nationally Strategic Climate Change Trust Fund (NSCCTF), Nigeria National Petroleum Corporation (NNPC), Special Climate Change Unit(SCCU) among others and local institutions such as banks, insurance companies that are involved in financing climate change adaptation strategies should endeavour to make livestock particularly poultry farming in relation to accessibility of finance for climate change adaptation strategies a priority; and
- iii. Institutions that support the finance of climate change adaptation strategies can make poultry

farmers to interrelate socially by forming an association so that they can relate perfectly and have great access to the finance available for climate change adaptation strategies.

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