



# Poultry Farmers Willingness to Pay for Agricultural Insurance Policy in Kogi State, Nigeria

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Received: 30 Oct 2022; Received in revised form: 17 Nov 2022; Accepted: 21 Nov 2022; Available online: 27 Nov 2022

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**Abstract**— This study looked at the factors that affect poultry farmers' willingness to pay for insurance. Using a standardized questionnaire, 120 farmers was randomly chosen. Binary logistic regression, the t-test, means, frequency distribution, and percentages were utilized to examine the data. One of the main conclusions was that most farmers were men. The bulk of respondents (96.7%) were found to be literate, with the average age of farmers being 44 years old. The majority of responders (72.5%) were married, and poultry farmers had an average of about 12 years of experience. The majority of respondents (62.5%) lived in households with an average of six people and did not belong to any cooperative societies. About 70% of survey participants said they had never used extension services. Before and after owning an insurance policy, a farmer's average yearly income was ₦145,110.83 and ₦252,692.92 respectively. About ₦5466.87 was the average price that poultry farmers were ready to pay. Income, extension access, awareness, cooperative society membership, access to credit, gender, flock size, marital status, and distance, at 5% probability levels, were the characteristics that affected willingness to pay. In order to enhance willingness to pay for poultry insurance, the study recommends measures that would increase poultry farmers' access to agricultural insurance at subsidized rates.

**Keywords**— Poultry, farmers, WTP, insurance policy

## I. INTRODUCTION

Agriculture is a major contributor to the economies of most developing countries, and Nigeria's economy has profited immensely from it since independence (Jatto 2019). Agriculture, which accounts for close to 40% of the country's GDP, plays a vital role in livestock production (Hirfirfot et al 2014). The agricultural sector, according to Adah et al. (2022), performs a variety of significant functions in enhancing food security, employment creation, foreign exchange earnings, the provision of industrial raw materials, the alleviation of poverty, and environmental sustainability. A crucial element of Nigeria's agricultural economy is poultry farming. It has been well-liked by the populace in virtually all parts of Nigeria as a result of its prolific tendencies and speedy returns in the form of money and other concrete benefits (Akerle et al 2022).

Regardless of the recent finding of crude oil and the fast industrial development that has been seen in Nigeria, agriculture still has a significant impact on the country's economy. Prior to the dominance of crude oil, agriculture was the primary source of foreign exchange. Now that oil production is declining, there is a lot of pressure on Nigeria to diversify its economy. As a result, the government is now concentrating on the agricultural sector in an effort to encourage its expansion as a vehicle for industrial development, food security, and foreign exchange (Akinbamowo 2013).

Despite the fact that the poultry industry has made tremendous technical progress over the past ten years and has continued to support Nigeria's food security and economic expansion, the sector still faces numerous challenges. The success of Nigeria's farming sector is seriously threatened by these risks because they are difficult

to predict. The risks involved in farming have been broken down into five categories: production, marketing, financial, institutional, and human risks, according to Anosike et al. (2018). Poultry production is not risk-free. Risk factors that commonly increase production include the weather, predators, theft, droughts, floods, and pest and disease outbreaks (Mapiye et al 2018).

Market risks arise when input and output costs alter as a function of supply and demand fluctuations in the market (Taiwo et al 2019). Financial issues arise when there are uncertainties over the continuation of credit extensions, interest rates, and the proportion of farmers who default on their loans. Human risks are those that affect a farm's profitability because of aspects related to the people who run it, such as bad health, while institutional risks are those that affect a farm's productivity and profitability as a result of changes in governmental rules (De Vries, and Marcondes 2020). Farming communities face a variety of dangers. Even though they have created strategies to stop, reduce, lessen, or manage these risks, there are still problems with residual risks. These are the kinds of tragedies that human activity is powerless to prevent or lessen. The damage they cause to persons and property just cannot be overstated. In such cases, Agricultural insurance might be useful (Assa et al 2021).

Agricultural insurance is defined as the process of stabilizing income, employment, price, and supplies of agricultural products through regular, intentional accumulation of funds in small amounts by many participants during advantageous times to protect some or a small number of participants during adverse times (Jatto 2019). In other words, risk management includes the use of insurance. The basic objective of any farm insurance policy is to serve as a safety net for losses caused by catastrophes. Additionally, it serves as security for bank loans given to farmers for agricultural reasons (Taiwo et al 2019).

Due to problems like high administrative costs, moral hazard, adverse selection, and the protracted delay in indemnity payments in the event of a farm disaster, the majority of Nigerian farmers are not enthusiastic about purchasing agricultural insurance policies. These problems have all discouraged reliance on this insurance option (Cariappa et al 2019). Consequently, just 1% of farmers choose to be covered by agriculture insurance as a whole (Afroz et al 2017). When it comes to rearing chickens, Gbigbi and Ikechukwuka (2020) contends that farmers who have insurance are able to make substantially larger investments and riskier production choices. The insurance program's objective is to safeguard chain participants against the financial ramifications of conceivable agricultural loss scenarios. According to a prior study, the

low adoption of agricultural insurance in developing nations may be related to a lack of knowledge of the programs and a poor comprehension of insurance (Kandel and Timilsina 2018). Prior study by Gbigbi and Ikechukwuka (2020) have shown that the demand for micro-insurance products is influenced by a variety of farmers' economic, social, structural, individual, and institutional factors. They reported further that farmers' engagement of crop insurance is apparently influenced by their access to financing, income, and extension services.

Kumari et al (2017) looked into how respondents' socioeconomic characteristics affected their willingness to take crop insurance plans. Discriminant analysis was used by them. According to the research, factors that affected willingness to pay included age, income level, household size, and education level. Other factors included farm size, degree of satisfaction, awareness, and availability to funding. Farmers who earn more money are more inclined to use other risk management techniques, hence it was discovered that farm income has a negative impact. High income farmers are shown to be more ready to pursue other tactics, even if they are more expensive, than purchase insurance.

Idiaye et al. (2020) looked at consumer perceptions and willingness to pay (WTP) for safety and novel aspects of processed chicken meat in Oyo State, Nigeria, while taking into account their risk aversion. The results of the logit regression model demonstrated that sex, household size, major occupation, being a supermarket shopper, income, and age had a substantial impact on customers' willingness to pay a premium for the innovative and safe characteristics of processed chicken meat. The average WTP was calculated to be 1,613.16 Naira. These WTP investigations were all conducted elsewhere than the research location. To the best of my knowledge studies on willingness to pay for poultry insurance by farmers is scanty. This is a serious gap this study has addressed. Therefore current information on poultry farmers' WTP for insurance to guide policy makers for meaningful development becomes vital. The objectives were specifically to

- i. describe the socioeconomic traits of poultry producers
- ii. ascertain the sources of insurance awareness
- iii. estimate the amount farmers are willing to pay
- iv. examine the effect of ownership of insurance policy on income
- v. determine the factors inducing poultry farmers' WTP insurance

## II. MATERIALS AND METHOD

### The Study Area

The study was conducted in Kogi State, Nigeria. It is situated between latitude 7° 49'N and longitudes 6° 45' E. Kogi State consists of 21 local government areas and is broadly divided into three agricultural zones namely A-East, B-West and C-Central (Adah et al 2022). The two main seasons of the climate are dry and wet. March ending marks the beginning of the wet season, which lasts until the

end of October. The dry season starts in the month of November and lasts until the end of February. Between December and January, when it is dry, the harmattan wind blows. The annual rainfall ranges from 850 to 2000 millimetres with mean temperature of 28°C during the rainy season and 35°C during the dry season. The main occupation people are agriculture. Also, livestock resources include goats, poultry, pigs, cattle and sheep which are traditionally reared on free range by the farmers. Figure 1 shows the map of Kogi State.

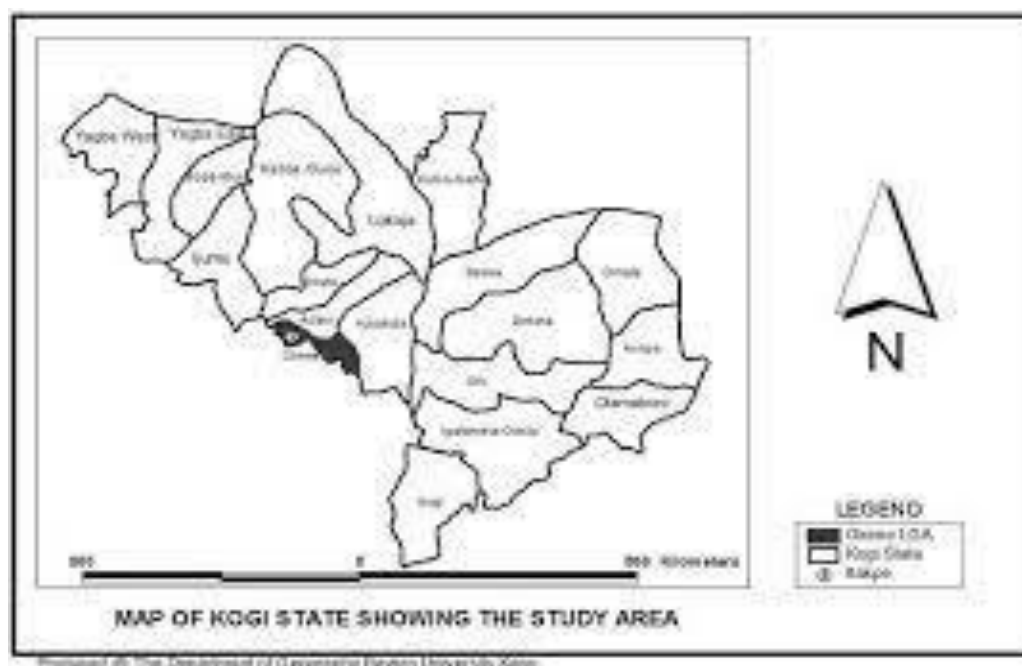


Fig.1: Map of Kogi State

### Method of Data Collection/ Sampling Procedure

Data for this study was obtained mainly from primary sources through a well-structured questionnaire. A multistage random sampling procedure was used for this study. The first stage involved a purposive selection of one local government area in each agricultural zone with higher poultry farms and dense population. The second involved the random selection four (4) major communities from the three districts of each selected local governments giving a total of 12 communities. In the third stage entails random selection of 10 respondents each totally 120 farmers.

### Method of Data Analysis

Descriptive statistics and inferential statistics such as the logistic regression model was utilized to achieve the objective.

### Model Specification

The logit regression model is a multivariate technique which allows for estimating the probability that an event occurs or not by predicting a binary dependent outcome

from a set of independent variables. The logit model is based on cumulative logistic probability function and it is computationally tractable.

The Logistic regression is specified as:

$$P_i = \frac{1}{1 + e^{-Y_i}} = \frac{n(n-1)x^2}{1 + e^{-(\beta_1 + \beta_2 x + \mu_i)}}$$

$$1 - P_i = \frac{e^{-(\beta_1 + \beta_2 x + \mu_i)}}{1 + e^{-(\beta_1 + \beta_2 x + \mu_i)}}$$

Let  $\beta_1 + \beta_2 x + \mu_i = z$

Then it become

$$1 - P_i = \frac{e^{-z}}{1 + e^{-z}}$$

Rearranging

$$e^z = \frac{P_i^{-z}}{1 - P_i}$$

Taking the log of both sides

$$\ln e^z = \ln \left( \frac{P_i}{1 - P_i} \right)$$

$$z_1 = \ln \left( \frac{P_i}{1 - P_i} \right)$$

$$\ln \left( \frac{P_i}{1 - P_i} \right) = \beta_1 + \beta_2 x_1 + \mu_i$$

The cumulative logistics probability model is econometrically specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \dots \dots \dots \beta_{12} X_{12} + \mu$$

Where Y = WTI (dummy, if the farmer is willing = 1. Otherwise = 0).

$\beta_0$  = Intercept

$\beta_1 \dots \beta_{13}$  = Coefficient of independent variables

$X_1$  = Age of respondents (years)

$X_2$  = Educational status (years in formal schooling)

$X_3$  = Income (₺)

$X_4$  = Access to Extension services (1 access, 0 if no access)

$X_5$  = Awareness of insurance scheme (1 if aware, 0 if not aware)

$X_6$  = membership of cooperative (1 if member, 0 if otherwise)

$X_7$  = access to credit (1 if member, 0 if otherwise)

$X_8$  = Gender of respondents (1 if male; 0 if female)

$X_9$  = Farming experience (Number of years in farming operation)

$X_{10}$  = Flock size (number of birds)

$X_{11}$  = Marital status

$X_{12}$  = Distance to insurance institutions (km)

$\mu_1$  = Stochastic error term

### III. RESULTS AND DISCUSSION

Table 1 showed the socio-economic attributes of the respondents.

**Gender of Respondents:** The majority of farmers (80.0%) were men, with only 20.0% being women. This might be the case because raising chicken, like raising other livestock, requires a lot of energy, and men can engage in more strenuous activities than women can. The findings suggested that chicken farming is still primarily a male occupation, probably as a result of the high amount of risk

involved, labour-intensive nature of the industry, and other husbandry procedures that are not appealing to most women. The research by Gbigbi and Isiorhovoja (2022) is in line with this conclusion.

**Age of respondents:** The respondents were primarily middle-aged, or between the ages of 30 and 49, with 77 respondents, or 64.2%, of the total. 33.3% of the sample was made up of farmers who were over 49 years old. 2.5% of respondents of farmers were under 30 years (Table 4.1). The average age of individuals who might consider buying insurance was 44. This means that the majority of the respondents were in a period of economic activity, which may have had a beneficial impact on their willingness to pay for insurance.

**Educational level:** The results showed that 49.2% of the respondents have completed at least secondary school, while 36.7% and 10.8% have tertiary and primary school, respectively, and 3.3% have not completed any formal education. The majority of respondents were literate, as evidenced by this. Because education is thought to have a good impact on decision-making ability and resource utilization in business management, educated respondents were more inclined to buy insurance than uneducated respondents. This study agrees with Kumari et al. (2017), who found that chicken producers had a high level of education.

**Farming Experience:** The majority of respondents (38.3%), had farming experience ranging from 6 to 10 years. Following closely after were 30.8% of the respondents with 11–15 years of farming experience. About 24.2% of people had been farmers for more than 15 years. The percentage of respondents with less than five years' experience in poultry farming was 6.7%. Twelve years on average were spent farming. The vast amount of farming experience of the respondents may have influenced their aptitude for using technologies and other risk management techniques. This shows that the production of poultry has been a long-running industry in the area under study. This is anticipated to show up in high level poultry management because as a farmer gains more exposure and expertise, they are also predicted to be more effective.

**Household Size:** The majority of farmers (51.7%) had households with four to six people, while 28.3% had seven to nine people. 12.5% of households had a size greater than 9. Only 7.5% of those surveyed lived in households with one to three people. The average household size of those willing to pay for insurance was 6 persons. This can assist in providing family labour for farming activities.

**Cooperative Membership:** Only 37.5% of farmers are members of one or more cooperative societies, compared to the majority of respondents (62.5%) who did not belong to

any cooperative societies. Cooperative membership enables farmers to receive credit, knowledge, and inputs through collective bargaining. But it's expected that farmers who aren't part of cooperatives will utilize agricultural insurance schemes less frequently and have less prospects of adoption. This findings is consistent with Gbigbi and Ikechukwuka (2020).

**Extension Services:** In the research area, only 30% of respondents used extension services to enhance their willingness to pay for insurance, while 70% of respondents did not increase their want to pay for insurance by doing so. Contrary to Ovharhe et al. (2020)'s findings, which indicated that 76.3 percent of respondents had access to extension services during the previous farming season.

**Marital Status:** Most farmers (72.5%) were married, compared to 27.5% who were single. The findings suggest that being married is a sign of someone choosing to behave

properly toward others. It might have a positive effect on agricultural production, particularly in terms of labour availability. The most prevalent form of employment of the majority of Nigeria is subsistence agriculture, with family labour being regarded as the most important component of labour. The findings of this research are consistent with those of Gbigbi and Isiorhovoja (2022), who reported greater percentages of married respondents.

**Access to credit:** While 56.7 percent of respondents had access to credit from financial institutions, just 43.3% of respondents lacked access to credit to boost productivity. Before credit can be secured, the majority of farmers who get government financial assistance are always required to sign up with insurance companies. As a result, these recipients' farmers indirectly participate in the insurance scheme. Increased production volume due to easier access to financing will affect farmers' level of output.

Table 1: Socioeconomic Attributes of the Producers

Variable	Frequency	Percentages	Mean/Mode
<b>Gender</b>			
Male	96	80.0	Male
Female	24	20.0	
<b>Age (years)</b>			
< 30	3	2.5	44 years
30-39	33	27.5	
40-49	44	36.7	
50-59	30	25.0	
Above 59	10	8.3	
<b>Educational level</b>			
No education	4	3.3	Secondary
Primary education	13	10.8	
Secondary education	59	49.2	
Tertiary	44	36.7	
<b>Marital status</b>			
Married	87	72.5	Married
Single	33	27.5	
<b>Accessibility to credit</b>			
Yes	68	56.7	Yes
No	52	43.3	
<b>Cooperative membership</b>			
Member	45	37.5	Non members
Non-member	75	62.5	
<b>Household size (number)</b>			
1-3	9	7.5	6 persons
4-6	62	51.7	
7-9	34	28.3	



Above 9	15	12.5	
<b>Experience (years)</b>			
1-5	8	6.7	
6-10	46	38.3	
11-15	37	30.8	12 years
Above 15	29	24.2	
<b>Extension services</b>			
Yes	36	30.0	No
No	84	70.0	

### Sources of Insurance Awareness

Table 2 demonstrated that farmers obtain information from a variety of sources, such as the farmers cooperative society (96.7), their fellow farmers (95.0%), radio (90.0%), and newspapers (38.1%), which play a significant role in

informing farmers about the various insurance services offered by the public sector and private insurance companies. The least often cited source of information in the research area was insurance companies (20.0%). The outcome is similar with studies on information uptake in Nairobi by (Kae, 2019).

Table 2: Means of Insurance Awareness

Means of awareness	Frequency	Percentage	Rank
Radio	108	90.0	3 <sup>rd</sup>
Television	30	25.0	6 <sup>th</sup>
Fellow farmers	114	95.0	2 <sup>nd</sup>
Farmers' cooperative society	116	96.7	1 <sup>st</sup>
Newspaper	46	38.3	4 <sup>th</sup>
Insurance providers	24	20.0	7 <sup>th</sup>
Extension agents	42	35	5 <sup>th</sup>

### Multiple response

### Average Amount Willing-to-Pay for insurance

The amount that the respondents were willing to accept as agricultural insurance is shown in Table 3. The findings indicate that 60.0% of the interested respondents were willing to pay an insurance premium of N5000 or less. About 28.3% of the respondents indicated that they would be willing to spend between N5000 and N10000, while 10% said they would spend between N10001 and N15000. Only

1.7% of the interested farmers, however, were prepared to spend more than N15,000 year. The average cost for those eager to purchase insurance was N5466.87. According to Oduniyi et al. (2020), only 10.8% of livestock farmers in South Africa are prepared to pay for Index-Based Cattle Insurance at a maximum cost of R600 (N15,844.50) per unit of livestock, which is far more than the price used in this study.

Table 3: Price Farmers Are Willing to Pay for insurance

Amount (N)	Respondents	Percentage	Mean (N)
5000 and below	72	60.0	
5001-10000	34	28.3	5466.87
10001-15000	12	10.0	
Above 15000	2	1.7	

### Ownership of insurance policy on income

According to Table 4 findings, most farmers (39.1%) netted between N100,001 and N200,000 per year. About 35.0% of farmers got less than N100,000 per year, 17.5% realized between N200,001 and N300,000 per year, and 6.7% earned between N300,001 and N400,000 per year. A little over 1.7% of farmers had incomes above N400,000 prior to purchasing insurance. Prior to owning an insurance coverage, the average annual income was N145,110.83. Similarly, the statistics show that 13.3% of the farmers made N100,000 or less annually. Approximately 19.2% of farmers got between N100,001 and N200,000 in income, 32.5% made between N200,001 and N300,000 in income, and 30.0% made between N300,001 and N400,000 in income. About 5.0% of farmers who owned insurance policies made more money than N400,000. After owning an insurance policy, the average income was N252,692.92. The outcome reveals that the income of poultry producers

increased by 74% in business. This outcome is explained by the fact that having access to insurance can help businesses flourish.

The findings provide unmistakable proof that after participating, the average income of those who had insurance policies increased dramatically. This was demonstrated by the results, which showed that most farmers made less than N200,000 annually prior to owning an insurance policy but that most of them made more than N200,000 thereafter. This implies that farmers who earned more were more inclined to buy insurance. The conclusion that follows is that insurance greatly boosted the revenue of the scheme's participating farmers. This research supported that of Taiwo et al (2019). In Delta State, Ovharhe et al. (2020) reported a comparable outcome for participants in an extension intervention, who saw their farm income rise from N239,573.46 to N381,753.56.

Table 4: Ownership of insurance policy on income

Income before insurance	Frequency	Income after insurance	Frequency
100000 and below	42(35.0)	100000 and below	16(13.3)
100001-200000	47(39.1)	100001-200000	23(19.2)
200001-300000	21(17.5)	200001-300000	39(32.5)
300001-400000	8(6.7)	300001-400000	36(30.0)
Above 400000	2(1.7)	Above 400000	6(5.0)
Mean=N145,110.83		Mean=N252,692.92	

Figures in bracket are percentages

### Determinants of poultry farmers' willingness to pay for insurance

Table 5 displays the findings of the logit regression estimates of the factors that affect poultry farmers' willingness to pay. In accordance with the statistical diagnostic test, the computed model fit the data well, with chi-square statistics significant at the 1% level of significance. This suggests that the model's indicated variables are pertinent to understanding the respondents' decision to pay. Furthermore, the Log-likelihood statistic ratio (LR) of 47.857 was significant, indicating that the independent variables in the model collectively contributed to the chance that the poultry producers' willingness to pay was explained.

**Farm income:** With regard to willingness to pay for insurance, the farm income coefficient was positively significant at the 5% level. This suggests that a 1% rise in the farmers' income would result in a 1% increase in their willingness to pay for insurance. This outcome was anticipated since high-income farmers were likely to accept

insurance more readily than their low-income counterparts. This could be the result of the fact that people with high farm incomes are more inclined to employ risk management strategies despite the high expense, whilst those with low incomes might not be able to. This may help to explain the favorable correlation between farm revenue and farmers' capacity to purchase livestock insurance. This finding is in line with the findings of a related study by Kumari et al (2017), who found that when crop farmers' income rises, so does their capacity to pay insurance premiums.

**Access to Extension:** With a 5% willingness to pay for insurance, the access to extension coefficient (5.334) was favorable and statistically significant. Farmers' purchasing decisions are positively impacted by extension services because they provide them with crucial information on modern technologies, management techniques, and husbandry practices. The coefficient of access to extension services is 5.334, which implies that a further rise in access to extension services will lead to an increase in willingness to purchase insurance of 5.334 units. Numerous studies have shown that the likelihood of farmers enrolling in

insurance, which teaches them how to manage risk, increases as the number of farmers who use these services increases. Similar to how Ovharhe et al. (2020) found a positive link between extension services and willingness to participate, this result is consistent with their findings.

**Awareness:** The likelihood of farmers purchasing livestock insurance was significantly influenced by their knowledge of insurance. Comparatively speaking to their peers who lacked information, farmers who were aware of the insurance plans that were being given were more likely to buy insurance. According to the data, awareness status (4.122) is positively correlated with the likelihood that a person will decide to purchase an insurance, and at a 5% level of confidence, this correlation is statistically significant. According to the analysis, farmers who are aware of insurance find it simple and convenient to pay for insurance services. This is not surprising because awareness implies some understanding of the scheme's workings and economic significance. Therefore, a farmer who is aware of the policy and has a basic understanding of insurance advantages is more likely to accept and pay for insurance than one who doesn't even grasp the fundamentals of the program. This observation demonstrates that knowledge of any topic is essential for making decisions. This was consistent with research by Gbigbi and Ikechukwuka (2020), who found a link between patronage and insurance awareness. This demonstrates that farmers are more likely to adopt an insurance policy as a risk management technique the more information they obtain about livestock insurance.

**Cooperative Membership:** At the 5% level of significance, there is a negative correlation between cooperative membership and the likelihood that a chicken farmer will get insurance (-5.636). This suggests that compared to their counterparts who do not belong to any cooperatives, poultry producers who are members of cooperative societies are more inclined to not participate in insurance schemes. The adoption of insurance seems to be extremely sensitive to membership in economic associations. This is true because economic organisations, such as farmer groups and cooperatives, give its members access to loans as well as knowledge on new advances

**.Access to credit:** The chance of making a decision on readiness to pay was directly correlated with the coefficient of access to credit (3.111) of the poultry farmers at the 5% level of significance. According to the implication, farmers who have access to credit are more likely to pay for insurance services than farmers who do not. The majority of farmers responded that having an insurance certificate makes it easier for them to acquire bank loans, thus they

joined insurance plans to boost their loan eligibility. This supports the argument made by Gbigbi and Ikechukwuka (2020), who claimed that access to credit and participation in the program were positively related.

**Gender:** The finding that the gender of the poultry farmers was positive and significant at 5% suggests that male poultry farmers are more inclined to pay for insurance policies for their poultry farms than female poultry farmers. Sex was also discovered to have a substantial impact on African farmers of arable crops who purchase insurance in the study by Gbigbi and Ikechukwuka (2020).

**Flock size:** It is clear from Table 4.11 that the coefficient of flock size (0.002) has a significant role in predicting whether or not chicken producers are prepared to pay for insurance. This variable has a positive correlation with farmers' participation in the program, which suggests that farmers who invested more in their businesses are more likely to insure their farms than their counterparts who made smaller investments. This makes sense because a farmer who has made a significant financial commitment will want to protect his or her investment by getting farm insurance to avoid having to lose everything in the event of a disaster, which is typical in the poultry industry. Similar to this, additional research in Namibia, Nahas et al (2018) and Ethiopia, Amare et al. (2019), found a favorable relationship between household willingness to pay for index-based livestock insurance and herd size (2018).

**Marital Status:** Marriage status and readiness to pay for insurance exhibited a positive correlation with a statistically significant value of 3.713. Farmers who are married are obligated to enroll in insurance in order to lessen the risks to their home and the negative repercussions that may follow. Married people are more likely to have larger households and more obligations, and they are therefore more ready to pay more for insurance to protect their families and lessen their risk exposure.

**Distance to insurance office:** The coefficient of distance had inverse relationship with willingness to pay. This suggests that when farmers are further away from their locations, their willingness to pay for insurance will also decline. However, the desire to pay for insurance increases with proximity to the sites of insurance companies. The outcome is in line with Bogale's (2015) findings, which show that distance from the insurance office significantly reduces WTP for implementing insurance. Given that the poultry industry involves regular risks and uncertainties, the researcher chose the variable distance from insurance institutions as a relevant predictor variable.



Table 5: Determinants of poultry farmers' willingness to pay for insurance

Variable	Coefficient	Std. error	Wald	Sig.	Exp(B)
Age	0.037	0.048	0.593	0.441	1.037
Education	0.391	0.685	0.326	0.568	1.478
Income	0.000	0.000	4.011	0.045**	1.000
Extension access	5.334	1.585	11.322	0.001**	207.324
Awareness	4.122	1.418	8.449	0.004**	0.016
Cooperative	5.636	1.683	11.220	0.001**	0.004
Credit access	3.111	1.305	5.685	0.017**	22.438
Gender	5.061	1.563	10.489	0.001**	157.814
Experience	0.069	0.082	0.723	0.395	1.072
Flock size	0.002	0.001	10.641	0.001**	1.002
Marital status	3.713	1.345	7.619	0.006**	40.993
Distance	-0.117	0.031	14.127	0.001**	1.124
Constant	12.493	4.697	7.074	0.008	0.000
-2 Log-likelihood	47.857				
Cox & Snell R-square	0.600				
Nagelkerke R-square	0.820				

## Hypothesis

The resulting null hypothesis was tested.

### T-test on Income before and after ownership of insurance policy

The average yearly agricultural income of farmers was N145,110.83 prior to owning an insurance policy, but it increased to N252,692.92 afterward (Table 6). This outcome showed that farmers' farm revenue increased significantly as a result of the policy. The average yearly agricultural income of the farmers increased by N107,582.08 as a result. At the 5% confidence level, the

results showed that the t-value of 20.485 was significant. This demonstrates that there is sufficient facts to reject the null hypothesis and draw the conclusion that the income of farmers before and after purchase of an insurance policy differs significantly. This improves the outcome of descriptive statistics Table 4. However, the outcome is consistent with research by Taiwo et al (2019). This is a result of farmers' increased confidence following the adoption of an agricultural insurance policy that the insurer will indemnify them in the case of any loss resulting from risks and uncertainties in their business operations.

Table 6: T-test on Income before and after ownership of insurance policy

Variable	Mean	Std. deviation	Mean diff.	t-cal	Sig.
Income before	145,110.83	98,234.34	107,582.08	20.485	0.000
Income after	252,692.92	108,603.14			

## IV. CONCLUSION

The research explored the willingness of poultry farmers to pay for insurance. On the average, the farmers were willing to take insurance if the premium is not greater than N5466.87. The information of factors affecting farmers decision to pay for insurance policy may assist as a basis for government line agencies to draft inclusive guidelines for poultry farm risk management. The gathered knowledge from this study on farmers influential factors for WTP of

livestock insurance may help the government extension workers to expand their awareness program in more vulnerable areas and in a more organized manner. The majority of farmers obtained information on insurance from cooperative organizations, other farmers, and radio. The findings showed that agricultural insurance schemes significantly affect farmers' income and flock size. The results and conclusions drawn from this study will contribute to the body of knowledge available to policy

makers for determining the socially optimal charges for insurance services in Kogi State and other parts of the country.

The following policy recommendations therefore, arise from the study:

- i. This study recommends that, in order to encourage more poultry producers to participate in agricultural insurance, the government lower the price at which they can get agricultural insurance coverage.
- ii. According to the study, the government should create a policy that will reduce the cost of livestock insurance for poultry breeders in order to encourage them to buy it.

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