

Determination of Amount Poultry Farmers are ready to pay for Insurance: Evidence from Nigeria

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Received: 30 Oct 2022; Received in revised form: 18 Nov 2022; Accepted: 24 Nov 2022; Available online: 02 Dec 2022

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Abstract— *The study x-ray the amount poultry farmers are ready to pay for insurance. Input-output data were collected from 120 farmers randomly selected from 10 communities. The data generated were subjected to descriptive and inferential statistics. The mean annual flock size per farmer before and after possession of insurance policy was 1255 Birds and 2247 Birds respectively. Investigation into the awareness level showed that more than half of the poultry farmers (83.3%) were aware of insurance. Around 56.7% of the respondents were ready to pay for insurance. The contributory factors of the amount farmers are ready to pay were education, income, awareness, experience and flock size. The major constraints affecting the readiness of farmers to pay for insurance were insufficient fund, high premium, size of farm and payment of indemnity. The readiness constraint index (WCI) was 79%.*

Keywords— *Truncated regression, amount, poultry farmer, readiness*

I. INTRODUCTION

The largest number of poultry in Africa are raised in Nigeria each year. The poultry industry in Nigeria has an estimated 180 million birds and 80 million of these are raised in extensive systems, 60 million in semi-intensive systems, and 40 million in intensive systems. Activities related to the poultry industry are often fraught with a range of risks and uncertainties including theft, diseases, fire outbreaks or heat waves, flood and droughts. In order to lower the risk associated with their business, farmers share their risk by buying insurance from firms who offer premium rates for the required coverage that can be provided for any of these occurrences. However, despite rapid growth seen by the poultry industry in Nigeria during recent years only 30 % of demand for chicken products such as eggs and meat is met locally (Nhemachena et al 2018; Budhathoki et al 2019; Soye and Adeyemo 2017; Azubuike, 2015). But with international discussion of legislature aimed at enrolling more farmers into insurance, farming will become more economically sustainable and profitable (Pant et al 2019). Farmers who are insured are better able to manage risk because they can fund their losses as they happen (Reyes et al., 2017; Meuwissen et al 2018). Insurance is generally helpful for farmers because it makes sense economically. It

lowers their level of risk which, in turn, enables increased investment and income (Fonta et al 2018).

The poultry insurance plan has been designed to reduce agricultural losses, giving farmers the chance to make more profitable decisions. Despite the plan's importance, it has been noted that a lower percentage of farmers purchase the plans than that of other insurance plans. It's possible this is owing to different factors, including risk management plans, farmers' readiness to take part, and gender-based discrepancies in how risk profiles affect the readiness to pay for poultry insurance (Ahmed and Mustapha 2020). However, there is an unclear correlation between these influences and farmers' readiness to pay for chicken insurance (Gbigbi and Ndubuokwu 2022).

According to Paudel (2015), farmers could make higher investments and unsafe production decisions when they had insurance against raising chickens. This implies that the insurance agenda's goal was to protect the chain's participants from the financial consequences of possible agricultural losses. By participating in this agricultural insurance program, which was created to lessen the negative effects of natural disasters on agricultural productivity and to increase credit security by indemnifying against sustained

losses in the incident of a loss, farmers were able to reduce risk and uncertainty.

With only a few studies actually being done on the topic in Nigeria (Okpukpara et al 2021; Bamolefhe 2020; Haibin et al 2020), and none at all in our study area, it's now necessary to explore the factors that determine how much poultry farmers are ready to pay for insurance in the study location.

Research Hypotheses

HO₁: There is no significant difference between flock size before and after insurance involvement

II. MATERIALS AND METHOD

The investigation was conducted in Kogi State. Multistage sampling procedure was used to sample 120 poultry farmers from the three agricultural zones. Firstly, it involved the purposive selection of two blocks each from the zones due to the prevalence of poultry ranchers and agricultural risks as well as activities of insurance activities in such blocks to make 6 blocks. The second step entailed the random selection of two circles from the chosen blocks to make 12 circles. This is followed by random choice of one community each from the selected circles. The final stage involved the selection of 10 farmers from the 12 selected communities to give 120 farmers. Information was obtained from the respondents through the use of well structured

Table 1: Awareness of Poultry Insurance Scheme

Awareness	Frequency	Percentage	Mode
Yes	86	71.7	Yes
No	34	28.3	

Source: Field Survey data 2021

Table 2: Have you insured your farm?

Insured farm	Frequency	Percentage	Mode
Insured	32	26.7	
Not insured	88	73.3	Not insured

Source: Field Survey data 2021

Awareness level of Agricultural Insurance by the Poultry Farmers

Table 3 displays the levels of knowledge about agricultural insurance for farmers. 42.5% were very knowledgeable, 16.7% were averagely knowledgeable, 12.5% were only

questionnaire. Data obtained were presented in tables using frequencies, percentages, means and truncated regression. The hypothesis was tested with t-test analytical tool.

The truncated regression model used to estimate the amount farmers are ready to pay is specified as:

$$WTP = \beta_0 + \beta_1age + \beta_2edu + \beta_3income + \beta_4ext + \beta_5aware + \beta_6coop + \beta_7credit + \beta_8gen + \beta_9experience + \beta_{10}flocksize + \beta_{11}maristatus + \beta_{12}dist$$

III. RESULTS AND DISCUSSION

Awareness of Poultry Insurance Scheme

Only 28.3% of poultry farmers were unaware of insurance for poultry farms, despite the fact that more than half of them (71.7%) knew about poultry insurance only 26.7% insured their farms (Table 1 and Table 2). This suggests that poultry producers in the research area overwhelmingly have low participation rates in livestock insurance. This is backed up by the research of Fonta et al (2018), who found that chicken producers are underrepresented in agricultural insurance. One of the likely reasons for this is that there are barriers to farmers joining agricultural insurance, such as worries about receiving unpaid claims, a lack of understanding about the benefits of livestock insurance, delays in compensation payments, and high rates.

little knowledgeable, and 28.3% knew nothing at all. In total 71.7% of farmers knew about insurance. Despite having a higher knowledge of poultry insurance, only 56.7% of farmers reported being inclined to purchase it. It's possible that the basis of this is farmers' lack of faith in insurance providers.

Table 3: Level of Insurance Awareness

Awareness level	Frequency	Percentage	Mode
Low	15	12.5	
Medium	20	16.7	
High	51	42.5	High
Not aware	34	28.3	

Source: Field Survey data 2021

Risks Faced by the Farmers

Table 4 shows the hazards that the respondents faced. Around 96.7% of farmers said they encountered disease, 95.0% price increases, 88.3% floods, 69.2% pest infestations, 30.0% fire outbreaks, and 23.3% drought respectively. Diseases are the main danger that most farmers encounter, along with price increases and flooding as secondary risks. These dangers lead to increased job losses

and poverty rates among smallholders and also have a detrimental effect on prices and production limits. The majority of farmers rely on bird sales to earn enough money for their children's education and other expenses like food and medical care each day--any risk has a detrimental effect on them too. This is in line with research done by Gbigbi and Ndubuokwu (2022) who found price, flood, pests, drought and unfavorable weather as the top risks for Nigerian farmers too.

Table 4: What Are the Risk Types?

Risk Types	Frequency	Percentage	Rank
Flood	106	88.3	3 rd
Drought	28	23.3	6 th
Diseases	116	96.7	1 st
Pests	83	69.2	4 th
Fire outbreak	36	30.0	5 th
Price	114	95.0	2 nd

Farmers' readiness to pay for insurance

The information obtained from the farmers regarding their readiness to pay for insurance is shown in Table 5. The bulk of responders (56.7%) said they would be ready to pay for

insurance, while 43.3% said they would not. As Ahmed and Mustapha (2020) discovered, many farmers in the study area probably view the high cost of premiums as an issue and are reluctant to pay for livestock insurance.

Table 5: Farmers readiness to pay for insurance

WTP	Frequency	Percentage
Yes	68	56.7
No	52	43.3

Possession of insurance policy on flock size

The result in Table 6 clearly shows that the majority of farmers have flock sizes under 1000, which is approximately 57.5% of respondents in this study. 28.3% of respondents had flock sizes between 1001 and 2000, 6.7% had flock size between 2001 and 3000, 5% had flock size between 3001 and 4000, and only 2.5% had flock sizes above 4000. The mean flock size before farmers were offered insurance was N1255 birds. About 20% of farmers surveyed had flock size less than 1000 bird each year after

obtaining insurance. About 45% of those studied had flock size ranging from 1001 to 2000 birds each year, 18.3% from 2001 to 3000 birds per year, 10% from 3001 to 4000 birds per year, and just 6.7% had over 4000 birds throughout the course of an annual cycle for the business after farmers were offered insurance policies. After holding an insurance, the post-insurance average flock size was found to be 2247 birds per year. The results show that poultry farmers saw a 79% increase in their flock size. The cause of this is the access to insurance protection. The results showed that most

of those who had insurance policies had a flock size below 2000 birds annually before obtaining the policy, but after they accessed it, most of them had flock sizes above 2000

birds. This evidence supports the fact that farmers with larger flocks tend to be more inclined to purchase insurance and contributes to increases in family welfare.

Table 6: Possession of insurance on flock size

Flock size before insurance	Frequency	Flock size after insurance	Frequency
1000 and below	69(57.5)	1000 and below	24(20.0)
1001-2000	34(28.3)	1001-2000	54(45.0)
2001-3000	8(6.7)	2001-3000	22(18.3)
3001-4000	6(5.0)	3001-4000	12(10.0)
>4000	3(2.5)	>4000	8(6.7)
Mean=1255 Birds		Mean=2247 Birds	

(Figures in parenthesis are percentages)

Factors Influencing the Amount Poultry Farmers are ready to pay for insurance

Additionally, the study looked at variables that affect how much poultry farmers are willing to spend for insurance (Table 7). However, in a discrete choice context, it is impossible to directly examine the premium that farmers are ready to pay. Asking direct inquiries about the farmers' WTP for each insurance price contract helped to solve this problem. The factors affecting the sum farmers were ready to pay were identified using the truncated regression model. The estimated outcomes from the truncated regression model showed that five out of the twelve factors included in the model—education level, revenue from poultry farms, awareness, experience, and flock size—statistically influence farmers' judgments with regard to the amount to pay.

Education: The coefficient of education was positively and statistically significant with WTP amount at 5% level. In other words, farmers with better education levels will be more likely to pay a larger premium for a higher contract value. Farmers with greater levels of education may be better able to obtain, absorb, and comprehend information, as well as grasp the benefits of insurance. As a result, given the severity of the consequences on the farm, risk management techniques would probably be used even at high insurance costs. According to a study by Oduwaiye et al. (2017), education is positively connected with readiness to pay and a key determinant of insurance acceptance. The results are consistent with their findings.

Income: The amount that farmers were willing to spend to insure their poultry farm was considerably influenced by income, which was favorable. This indicates that, as would be expected, farmers with higher incomes were more ready to pay a higher premium to insure their poultry farm. Since they often have a lesser payment capability, farmers with

smaller incomes were therefore more prepared to pay a lower premium for insurance. Consequently, it can be inferred that, despite the fact that lower income farmers might be ready to buy insurance to better manage risk and protect their welfare, they might not be able to pay it. Similar findings were made by Boateng et al. (2016), who found that having a higher income increased the likelihood that farmers would pay more for insurance.

Awareness: the coefficient of farmers' awareness about insurance was positively significant with WTP amount at 1% alpha level. The amount the farmer was willing to spend had a positive and significant link with having knowledge about insurance. Farmers' knowledge of insurance, which came primarily from the media, may have influenced their desire to buy insurance. This might be because the information from this source was of high quality, and because the numerous sources from which farmers learned about the livestock insurance program being offered were reliable. This result is in agreement with Fonta et al (2018) finding that farmers' understanding of the insurance product has a significant impact on their decision to utilize insurance.

Experience: At the 1% significance level, experience in the poultry industry was significant and positively correlated with the sum farmers were willing to spend for animal insurance. This may be because farmers with more expertise in the poultry industry may be more aware of how disasters can affect their livelihoods and level of living than their counterparts with less experience, and as a result, may be more read to pay for insurance. Additionally, experience is the best teacher because they may have even been victims of certain types of catastrophes in the past. This result is consistent with what Gbigbi found (2021).

Flock size: At the 1% significance level, it was discovered that flock size and the sum farmers were ready to pay for

livestock insurance had a positive connection. This indicates that insurance premiums for farms were more likely to be higher for farmers who had larger flock sizes and were willing to get insurance. This is due to both the

fact that these farmers earn greater earnings and can afford to pay more, as well as the fact that they suffer significant risk whenever a danger exists.

Table 7: Factors influencing WTP decision on Amount (Premium)

Variable	Coefficient	Robust Std. Err.	P-value	Significance
Age	33.118	62.871	0.53	0.598
Education	2555.577	898.292	2.84	0.004**
Income	0.031	0.008	3.81	0.000***
Extension access	744.622	1120.014	0.66	0.506
Awareness	3086.137	1179.099	2.62	0.009**
Cooperative	2500.761	1530.225	1.63	0.102
Credit access	634.723	1157.22	0.55	0.583
Gender	1639.797	1336.08	1.23	0.220
Experience	161.204	29.896	5.39	0.000***
Flock size	2.413	0.761	3.17	0.002**
Marital status	2169.943	1395.38	1.56	0.120
Distance	33.089	103.84	0.32	0.750
Constant	13539.39	5263.776	2.57	0.010
Log pseudo likelihood	1093.3258			
Wald Chi 2	65.46			
Prob>Chi 2	0.0000			

***, **, represent 1% and 5% significance level respectively

Constraint Militating Against the Readiness of Farmers to Pay for Insurance

Table 8 highlighted the difficulties standing in the way of farmers' readiness to pay for insurance. 63.3% of respondents reported that insufficient funds were very difficult to come by, with 30.0% reporting it as substantial and 6.7% reporting it as a less serious concern. 40.8% and 56.7% of respondents also believed that the cost of insurance was a serious issue, while only 2.5% felt that it wasn't a serious issue at all. Gbigbi (2017) connected these funding limitations to flaws within the credit market which make it difficult for farmers to get the loans they need in order to afford premium payments, again confirming that 55.8% felt that farmer size was a very severe concern, 31.7% thought it was serious, 10.0% thought it was less serious, and 3.3% didn't believe it was such a big deal. 38.3% of respondents also believed risk aversion was a very severe problem, with 55% saying the same; 1.7% responding that risk aversion wasn't such an issue, and 5% sharing the opinion that risk aversion is less of an issue than others might think; 27.5%, 23.3% of farmers stated that the

attitude toward the insurance program was a very serious concern.

Indemnity payment was also viewed as a serious issue by 54.2% of farmers, a very serious one by 44.2% of farmers, and a less serious issue by 1.7% of farmers. The majority of farmers indicated that the indemnity payments made by insurance companies were tardy and insufficient, which had an impact on how they perceived the agricultural insurance program because they tended to think that insurance companies were only interested in collecting premium and not making indemnity payments when they were due. Once more, among the farmers, 37.5% thought the complicated technique was a very significant issue, 40.8% thought it was a serious constraint, 15.0% thought it was a less serious issue, and 6.7% thought it was not a serious issue. Due to the excessively bureaucratic procedures involved in operating insurance, farmers who experience administrative obstacles when engaging in agricultural insurance have a tendency to stop using the insurance program. A farmer's lack of faith in insurance companies was viewed as a very serious issue by about 40.0% of farmers, a serious one by about 54.2% of farmers, and a less serious issue by about

5.8% of farmers. Furthermore, 65.0% of the farmers thought that being inaccessible to a farmer was a serious issue, and 22.5% of them agreed that it was an extremely serious one. 7.5% of them concurred that it was a less serious issue, while 5.0% thought there was no issue at all.

Additionally, a majority of farmers—55.8%—felt that the high premium payment was a very significant issue, while a similar percentage—41.7%—felt it was a substantial restriction and a smaller issue for 2.5%. In addition, 53.3% of farmers thought that the distance to insurance businesses

was a major problem, 30.8% thought it was a very serious problem, 13.3% thought it was a less serious problem, and 2.5% thought it was not a serious problem at all. Once more, among the farmers, 38.3% believed that illiteracy was a significant issue, 38.8% agreed that it was a very serious problem, 19.2% thought it was a less serious issue, and 14.2% thought it was not a serious one. The result of the readiness constraint index (WCI) was 0.79. This implies that readiness to pay for insurance had been affected by 79% of the constraints.

Table 8: Constraints militating against the Readiness of Farmers to Pay for insurance

Constraints	VS	S	LS	NS	Total score	Mean
Insufficient fund	76(63.3)	36(30.0)	8(6.7)	0	428	3.57
Insurance scheme is too expensive	49(40.8)	68(56.7)	3(2.5)	0	406	3.38
Size of farm	67(55.8)	38(31.7)	12(10.0)	4(3.3)	410	3.42
Unreadiness to take risk	46(38.3)	66(55.0)	6(5.0)	2(1.7)	396	3.30
Attitude	28(23.3)	33(27.5)	40(33.3)	19(15.8)	310	2.58
Inadequate government policies	11(9.2)	37(30.8)	46(38.3)	26(21.7)	273	2.28
Indemnity payment	53(44.2)	65(54.2)	2(1.7)	0	409	3.41
Complicated procedure	45(37.5)	49(40.8)	18(15.0)	8(6.7)	371	3.09
Lack of confidence on insurance firms	48(40.0)	65(54.2)	7(5.8)	0	401	3.34
Accessibility	27(22.5)	78(65.0)	9(7.5)	6(5.0)	366	3.05
High premium	67(55.8)	50(41.7)	3(2.5)	0	424	3.53
Distance to insurance firms	37(30.8)	64(53.3)	16(13.3)	3(2.5)	375	3.13
Illiteracy of the farmer	34(28.3)	46(38.3)	23(19.2)	17(14.2)	337	2.80
Total						40.88

Above 2.50 = constraint, Below 2.50 = not a constraint

VS=Very serious, S= Serious, LS= Less serious, NS= Not serious

Grand mean=3.14

Constraint Readiness index (CWI) =0.79

IV. RESULT OF HYPOTHESIS

T-test on Flock size before and after possession of insurance policy

The t-test result showed that the mean number of birds the farmers owned before and after owning insurance policies was 1255 and 2247 respectively, with a mean difference of 992(Table 9). The change was statistically significant at 1%, proving the importance of the farmers' output before and

after the insurance policy. This finding indicates that having an insurance policy helped increase farmers' flock sizes. The t-value of 12.265 was statistically significant at 5%. Therefore, we accept the alternative (which rejects Ho), which states that having an insurance policy significantly help increase farmer's flock sizes. In contrast, Chand et al. (2018) reported that the insurance program did not result in an increase in productivity for peasant farmers.

Table 9: T-test on flock size before and after possession of insurance policy

Variable	Mean	Std. deviation	Mean diff.	t-cal	Sig.
Flock size before	1255	1090.73	992	12.265	0.000
Flock size after	2247	1607.15			

V. CONCLUSION

The study investigates the readiness of chicken farmers to pay for insurance. The staggering number of poultry firms and the myriad problems they face makes it necessary, if not mandatory, for business owners to accept insurance as a reasonable means of limiting unanticipated occurrences. In order to properly manage agricultural risks, a significant portion of farmers are also willing to purchase insurance coverage. Despite the numerous constraints facing poultry farmers in the study, poultry production would thrive if these constraints were reduced to an extent with the support of government. Considering that many farmers are aware of the importance of insurance in this industry, it is imperative that government intervenes by giving grants or subsidies which cover amounts being paid for agricultural insurance. Government should also develop a special credit program to make more farmers able to afford agricultural insurance coverage.

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