



Research Article

Determinants of Crop Farmers Participation in Agricultural Insurance in the Federal Capital Territory, Abuja, Nigeria

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ARTICLE INFO	ABSTRACT
Article No.: 111212255 DOI: 10.15580/GJAS.2013.1.111212255 Submitted: 12/11/2012 Accepted: 25/11/2012 Published: 20/01/2013 *Corresponding Author Sami, R. A E-mail: saintoyas@yahoo.com Keywords: <i>Farmers, Factors, Agricultural insurance, Participation, Logit</i>	This study was carried out to determine the factors influencing crop farmers' participation in agricultural insurance scheme in the federal capital territory, Abuja, Nigeria. A two stage sampling procedure was employed to select a sample size of 120 farmers and structured questionnaire was used to elicit data from the farmers. The data collected from the farmers were analysed using descriptive statistics and logit regression model. The findings revealed that 78.3% of the farmers were aware of the existence of Agricultural insurance scheme but only 35% of the farmers participated in the Agricultural insurance scheme. The logit regression showed that age, educational level, farm size and accessibility to credit were significant variables that influenced the probability of participation of the farmers in agricultural insurance scheme while household size, membership of association and contacts with extension agents were found to be insignificant in influencing the farmers participation in Agricultural insurance scheme. The major challenge faced by farmers in the course of their participation in agricultural insurance was delay in indemnity payment. It is recommended that effective service delivery by insurance service providers will ensure continuity of farmers' participation in agricultural insurance and also participation by farmers who are yet to participate.

INTRODUCTION

Nigerian farmers are increasingly faced with risk factors such as droughts, floods, diseases, pests, windstorms, accidents, fire, theft, damage and several other unplanned events whose occurrence cannot be readily predicted and therefore, poses serious threat to the success of farming enterprise in Nigeria (Eleri et al., 2012). Patrick (2010) opined that since farmers cannot predict the probability of occurrence of any of these and cannot bear these risks and uncertainties alone, they are faced with the option of transferring or sharing the risks involved in the day-to-day management of their farms with one or more individuals or firms. Agricultural insurance policy is one of the notable methods by which farmers can share or transfer the risks and uncertainties associated with their farming enterprise as it encourages them to make greater investment in Agricultural production, promotes their confidence in venturing into adoption of new and improved farming practices, enhances their accessibility to credit by financial institutions as the insurance cover as an added collateral and ultimately provide financial support to farmers in the form of indemnity which ensures continuity of their farming enterprise. Although crop insurance exists in Nigeria, it covers less than 1% of the total population of farmers (Eleri et al., 2012). According to Phillips (1988), Nigerian farmers are not very excited about taking an insurance policy. This can be traced to the less than satisfactory image of the insurance industry regarding loss compensations, and this problem has created mixed feelings towards Agricultural insurance by prospective farmers and hence, the farmers become reluctant in their willingness to take an insurance cover; and also considering the very low incomes, the small sizes of holdings aimed at subsistence production, large scale ignorance and poverty and the adverse view of other people's experiences with activities of insurance companies in other sectors, peasant farmers are generally reluctant to patronize the insurance market, let alone willingly forgo a small payment in the form of premiums in exchange for their farm risks (Olubiyi et al., 2009). In view of the risks and uncertainties of Agricultural production in Nigeria, the federal government of Nigeria launched the Nigerian Agricultural Insurance Scheme (NAIS) on the 15th December 1987 as part of governments efforts to enhance food production in Nigeria as it was realized that most efforts to promote food production have not yielded much results due largely to incidents of incremental weather conditions and the effects of natural hazards like flood, drought, fire, pests and diseases (Emmanuel, 2007). Despite the existence of insurance services from Nigerian Agricultural Insurance Corporation and other private firms in Nigeria, there has been a low level of participation of insurance activities by farmers and in view of this, there is the need to examine the level of awareness of farmers about agricultural insurance scheme and the factors influencing farmers willingness to participate in Agricultural insurance scheme. Therefore, the specific objectives of this study are:

1. To examine the level of crop farmers awareness and participation in Agricultural insurance scheme
2. To determine the factors influencing crop farmers participation in Agricultural insurance scheme
3. To ascertain the constraints encountered by crop farmers in participating in Agricultural Insurance scheme

MATERIALS AND METHODS

Study Area

The study area is the federal capital territory located in the geographical centre of Nigeria with a land area of 8, 000 square kilometres and lies between latitude 9° 10' north of the equator and longitude 7° 11' east (FCT, 2007). It is bounded in the North by Kaduna state, in the West by Niger state, in the East by Nasarawa state and in the South by Kogi state; and is made up of six area councils namely Gwagwalada, Kuje, Kwali, Bwari and Abuja Municipal. The major communities with high intensity of farming activities are Nyanya, Karu, Gwagwalada, Kuje, Abaji, Karshi, Bwari, Kwali and Garki. The study area experiences two weather conditions annually_ which are the rainy season and the dry season. The rainy season begins from April and ends in October and the dry season from November and ends in March. Farming is the major occupation of the people in the area and the crops grown are tomatoes, cowpea, soybean, maize, rice, yam and livestock reared include poultry, goats, sheep and cattle.

Sampling Procedure

A two stage sampling procedure was adopted in selecting respondents for this study. In the first stage, communities with farming households namely Kuje, Nyanya, Gwagwalada, Kwali and Abaji were randomly selected from the ten communities with high farming households in the Federal Capital Territory through the instrumentality of a random number table. In the second stage, 120 farmers were randomly selected from the selected communities in proportion to the sample frame of 1200 farmers in the communities. The use of random sampling was to ensure that each respondent in the selected villages had equal chance of being selected and thereby avoid bias.

Method of Data Collection

Primary data were employed in this study and the data were collected using a well structured questionnaire. The information obtained from the farmers include their socioeconomic characteristics such as farming experience, household size, educational status, farm size, sex, marital status and membership of associations, information on level of awareness of insurance and information on the constraints

encountered by the farmers in the process of participation in insurance scheme.

influencing farmers willingness to participate in Agricultural insurance scheme.

Analytical Tools

The data collected from the farmers were analysed using descriptive statistics and logit regression model. The descriptive statistics was used to examine the level of farmers' awareness and participation in Agricultural insurance scheme and to ascertain the constraints encountered by farmers in participating in Agricultural insurance scheme, while the logit regression model was used to determine the factors

Analytical Framework

The logit regression model is a unit or 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. According to Gujarati and Porter (2009), it is expressed as:

$$P_i = E(Y = 1|X_i) = B_1 + B_2X_i \dots \dots \dots (1)$$

For ease of estimation, equation (1) is further expressed as:

$$P_i = \frac{1}{1 + e^{-Z_i}} = \frac{e^Z}{1 + e^Z} \dots \dots \dots (2)$$

Where:

P_i = Probability of an event occurring

$$Z_i = B_1 + B_2X_i$$

The empirical model of the logistic regression for this study assumed that the probability of the farmers' participation in Agricultural insurance scheme is expressed as:

$$P_i = \frac{e^{b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7}}{1 + e^{b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7}} \dots \dots \dots (3)$$

P_i ranges between zero and one and it is non linearly related to Z_i . Z_i is the stimulus index which ranges from minus infinity to plus infinity and it is expressed as:

$$Z_i = \ln\left(\frac{P_i}{1 - P_i}\right) = b_0 + b_1X_1 + b_2X_2 + \dots \dots \dots + b_7X_7 + u \dots \dots \dots (4)$$

To obtain the value of Z_i , the likelihood of observing the sample was formed by introducing a dichotomous response variable. The explicit logit model was expressed as:

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots \dots \dots + b_7X_7 + u \dots \dots \dots (5)$$

Where:

Y = dichotomous response variable (1 for farmers who participated in Agricultural insurance scheme; 0 otherwise)

X_1 = Age of farmers (Years)

X_2 = Educational level of farmers (years of schooling)

X_3 = Farm size of farmers (hectares)

X_4 = Household size (number)

X_5 = Membership of associations (number of associations a farmer belongs to)

X_6 = Accessibility to credit (amount of loans a farmer accessed)

X_7 = Contact with extension agents (number of contacts)

$b_1 - b_7$ = coefficients of stimulus variables

b_0 = constant term

u = error term

RESULTS AND DISCUSSION

Awareness and Participation of Crop Farmers in Agricultural Insurance Scheme

Majority of the crop farmers (78.3%) were aware of Agricultural insurance scheme as indicated in Table 1.

Table 1: Distribution of Crop Farmers According to their Awareness of Agricultural Insurance Scheme.

Awareness	Number of Respondents	Percentage
Yes	94	78.3
No	26	21.7
Total	120	100

However, only 35% of the farmers participated in the insurance scheme as indicated in Table 2.

Table 2: Distribution of Crop Farmers According to their Participation in Agricultural Insurance Scheme.

Participation	Number of Respondents	Percentage
Yes	42	35
No	78	65
Total	120	100

Thus 65% of the farmers did not participate in the Agricultural insurance scheme and this implies that the non - awareness of the Agricultural insurance scheme by some of the respondents deprived them the opportunity of participating in the insurance scheme. Most of the farmers who participated in the Agricultural insurance scheme revealed that they were compelled to do so by the banks from whom they obtained agricultural loans.

Determinants of Crop Farmers Participation in Agricultural Insurance Scheme.

The parameters of the logit regression model were estimated using Shazam statistical package. The Chi square statistic of 65.246 ($p < 0.1$) showed that the model gave a good fit for the analysis. The result of the logit regression in Table 3 shows that Age, Educational level and Accessibility to credit were significant variables that influenced the participation of the farmers in Agricultural insurance scheme at 10% level of significant and also, farm size was a significant variable at 5% level of significant.

Table 3: Logit Regression Result.

Variables	Coefficients	Z - Statistic	Exp(b)
Age (X_1)	-2.424 (1.143)	2.120**	0.086
Educational level (X_2)	0.507 (0.194)	2.915**	1.660
Farm size (X_3)	0.063 (0.032)	1.650*	1.065
Household size (X_4)	-0.460 (0.038)	1.210	0.631
Membership of association (X_5)	1.957 (1.260)	1.553	7.078
Accessibility to credit (X_6)	0.568 (0.197)	2.877**	1.765
Contacts with extension agents (X_7)	-0.783 (0.640)	1.212	0.457
Nagelkere R-squared (R^2)	0.870		
-2log likelihood	97.245		
Chi square (χ^2)	65.246		

Note: *P < 0.1 **p < 0.05 Values in parentheses = Standard errors

Household size, membership of association and contacts with extension agents were found to be insignificant in influencing the farmers' participation in Agricultural insurance scheme. The coefficient of age of the farmers which was found to be negative and significant at 10% implies that the older the farmers, the lower their participation in agricultural insurance scheme and this could be largely due to less receptivity of older farmers to innovation unlike young educated farmers who have high receptivity to innovation. This result is consistent with the result of similar study by Mishra Ak and Godwin BK (2006). The coefficient of educational level of the farmers was found to be positive and significant at 10% and this conforms to the *a priori* expectation that the higher the educational level of farmers, the higher their participation in agricultural insurance scheme. The coefficient of accessibility to credit by the farmers was found to be positive and significant at 5% implying that the higher the access to credit by the farmers, the higher their participation in agricultural insurance; which was evident in the response of most farmers that access to loans from banks is better facilitated when they have insurance cover and therefore, they subscribe to insurance scheme so as to increase their accessibility to loans.

Constraints Encountered by Crop Farmers in their Participation in Agricultural Insurance Scheme

The major problem encountered by the farmers under Agricultural insurance scheme is that of delay in indemnity and is ranked first. The payment of indemnity by insurance companies was indicated to be untimely and inadequate by most of the farmers and this affected their perception of Agricultural insurance scheme as they tend to believe that insurance companies are only interested in collecting premium and not paying indemnity when due. Administrative bottlenecks which stems from excessive bureaucracy is ranked second as a constraint faced by farmers in participating in agricultural insurance and this constraint has the tendency of making the farmers withdraw from insurance scheme because of the excessive bureaucratic processes in the operation of insurance. Untimely assessment of losses by insurance companies is ranked as the third problem faced by the farmers in their participation in insurance scheme. The other constraints encountered by the farmers as shown in table 4 are rigorous procedures in claim settlement, inaccessibility to insurance personnel and inadequate information dissemination.

Table 4: Distribution of Crop Farmers According to their Challenges in Participating in Agricultural Insurance Scheme(Multiple Responses Allowed. N = 120).

Constraints	Number of Respondents	Percentage	Rank
Delay in indemnity payment	107.00	22.06	1 st
Administrative bottlenecks	90.00	18.56	2 nd
Delay in assessment of losses	78.00	16.08	3 rd
Rigorous procedures in claim settlement	75.00	15.46	4 th
Inaccessibility to insurance personnel	70.00	14.43	5 th
Inadequate information dissemination	65.00	13.40	6 th

CONCLUSION

The findings of this study showed that Majority of the respondents (78.3%) were aware of Agricultural insurance scheme but only 35% of the respondents participated in insurance Agricultural scheme. The result of the logit regression analysis showed the coefficients of age, educational level and accessibility to credit were significant variables that influenced the participation of the farmers in Agricultural insurance scheme at 10% level of significant and also, farm size was a significant variable at 5% level of significant

while household size, membership of association and contacts with extension agents were found to be insignificant in influencing the farmers' participation in Agricultural insurance scheme. The major challenges faced by farmers in the course of their participation in Agricultural insurance were delay in indemnity payment, administrative bottlenecks, delay in assessment of losses, rigorous procedures in claim settlement, accessibility to insurance personnel and inadequate information dissemination. It is recommended that to ensure continuity of farmers participation in Agricultural insurance and also

participation by farmers who are yet to participate, there is the need for proper sensitization of farmers on the importance of insurance policy by Government, non – governmental agro services providers and insurance corporations; and also the insurance corporations should ensure prompt delivery of their services to farmers.

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