MERIT RESEARCH JOURNALS
www.meritresearchjournals.org

Merit Research Journal of Agricultural Science and Soil Sciences (ISSN: 2350-2274) Vol. 4(8) pp. 089-093, August, 2016
Available online http://meritresearchjournals.org/asss/index.htm

Original Research Article

Determinants of crop farmer's participation in agricultural insurance scheme in Abuja, FCT, Nigeria

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Abstract

This study was carried out to determine the factors influencing participation of Agricultural Insurance Scheme among food crop farmers in Federal Capital Territory Abuja, Nigeria. Sampling procedure was employed to select a sample size of 100 farmers and structured questionnaire was used to elicit data from the farmers. The data collected from the farmers were analyzed using descriptive statistics and logit regression model. The logit regression model was selected as the lead equation or line of best fit. This was based on the co-efficient of multiple determination (R^2) = 0.870. This implies that about 87% of the proportion of the variation in dependent variable Y was explained by the independent variables. The logit regression results 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 contact with extension agents were found to be insignificant variables. The major challenges faced by farmers in the cause of their participation in agricultural insurance scheme were delayed claim payment. The study recommended that effective service delivery by insurance service providers should ensure continuity of farmers' participation in agricultural insurance scheme and also participation by farmers who are yet to participate. Continuous sensitization, early assessments of claims and adequate and timely payment should be encouraged so as to attract the confidence of the farmers.

Keywords: Agriculture, Crops, Determinants, Farmers, Insurance, Participation, Scheme

INTRODUCTION

Insurance is considered as one of the most effective means of reducing the vulnerability of the poor from the impacts of disease, violence, disability, fire, and other hazards. Insurance protect against unexpected losses by pooling the resources of the many to compensate for the losses of the law, the more uncertain the event, the more insurance becomes the most economical form of protection. Policy holder only pays the average loss suffered by the group rather than the total cost of an individual event. Insurance replaces the uncertain prospect of large losses with the certainty of making small/regular affordable premium payment (Brown and Churchill, 1999). The primary function of insurance is to act as a risk transfer mechanism to provide peace of mind and protection against losses. Risk can be handled by assumption, combination transfer or loss prevention activities. Insurance scheme utilize the consummation method by persuading a large number of individuals to hook their risk into a large group so as to minimize over risk. In the developed world, insurance is part of the society, such that some forms of cover are required by law. In developing countries like Nigeria, the need for such a safety measures becomes more important especially in the poorest society where vulnerability to risk is much greater and there are fewer opport-unities available to recover from a large loss (Aliero and

Mukhtar, 2012).

In the light of the above, the procumbent of Federal Republic of Nigeria identifies Agricultural Insurance as a panacea to the doubt and attendant disenchantment expressed by credit institutions following the multifarious risk and uncertainties in Agriculture. In an attempt to assist farmers in managing risks, various insurance policies, programmes and projects were put in place by the Nigerian Agriculture Insurance Scheme (NAIS). In view of the risk and uncertainties of agricultural production in Nigeria, the Federal Government lunched the Nigeria Agricultural Insurance Scheme (NAIS) on 15th December 1987 and in 1988 incorporated the Nigeria Agricultural Insurance Company as part of its effort to enhance food production in Nigeria as it was realized that much efforts to promote food production have not yielded the desired result due largely to incident of incremental weather conditions and the effects of natural hazards like floods, droughts, fire, pests and diseases (Nnadi *et al.,* 2013).

Agricultural insurance is the stabilization of income, employment, price and supplies of agricultural products by means of regular and deliberate saving and accumulation of fund in small installment by many in favorable time period to defend the participation in bad time (Mordi, 1995). The scheme covers arable crops and livestock.

The Nigeria Agricultural Insurance Company (NAIC) succinctly put the objective of the scheme as follow:

a) To promote agricultural production by enhancing greater confidence in adopting new and improved farming practices and making greater investment in the agricultural sector thereby increasing the total production.
b) To provide financial support to farmers in the event of losses arising from natural disasters.
c) To increase the flow of agricultural credit from lending institutions to the farmers
d) To minimize/eliminate the need for emergency assistance provided by the government during period of agricultural disasters.

Despite the existence of insurance services from Nigeria Agricultural Insurance Corporation and other private firms in Nigeria, there has been low level of participation in insurance activities by farmers. In view of this, there is need to determine the factors influencing farmers willingness to participate in Agricultural Insurance Scheme and the likely associated constraints encountered by the crop farmers in their participation in the Scheme especially in Abuja, the Federal Capital Territory, Nigeria.

Objectives

The objectives of this study are:
1. To determine the factors influencing crop farmer's participation in Agricultural Insurance and also investigate reasons for participation and non-participationby the farmers in the scheme.
2. To ascertain the constraints encountered by the crop farmers in participating in Agricultural Insurance Scheme.

METHODOLOGY

The study area is the Federal Capital Territory located in the geographical center of Nigeria with a land area of 8,000 square kilometers and lie between latitude 9^0 10' North of the equator and longitude 7^0 11' East (FCT, 2007). It is bounded in the North by Kaduna State, the West by Nasarawa State and the South by Kogi State. FCT is made up of six area councils namely; Gwagwalada, Kuje, Kwali, Abaji, Bwari, and Abuja Municipal. The area experiences two distinct seasons; namely, the rainy and dry seasons. The rainy season begins from April and ends in October while the dry season commences in November and ends in March. Farming is the major occupation of the people in the study area. Some of the crop grown are, maize, rice, cowpea, soy-beans, yam and tomatoes, while some of the livestock reared include; poultry, goat, sheep and cattle. Fish farming is also being practiced.

Sampling Technique and Sample Size

A two stage sampling procedure was adopted in the selection of respondents for this study. In the first stage, communities with higher concentration of farming households were purposely selected and these communities include; Abaji, Gwagwalada, Kuje, Kwali and Nyanya. In the second stage, 100 farmers were randomly selected in proportion to the number of farmers in the selected communities and this formed the sample size for the study. The use of random sampling was to ensure that each respondent in the selected villages had equal chance of being selected and thereby avoiding bias.

Method of Data Collection

Primary data were employed for this study and the data were collected using a well-structured questionnaire. The information that was obtained from the farmers included; their socio-economic characteristics such as farming experience, household size, educational status farm size, gender, marital status and membership of association, information on level of awareness of Insurance and information on the constraints encountered by the farmers in the process of participation in the Insurance Scheme.

Method of Data Analysis

The data collected from the farmers were analyzed using descriptive statistics and logit regression model. The descriptive statistics was used to examine the level of farmer's 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 examine the factors influencing farmers' willingness to participate in Agricultural Insurance Scheme.

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

$P_i = E(y=1/xi)=B_1+B_2X_1$……(1)

For the case of estimation, equation (i) is further expressed as

$$P_i = \frac{1}{1+e-zi} = \frac{ez}{1+ez} \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where

P_i = probability of an event occurring

$Z_i = B_1+B_zX_i$

The empirical model of the logical regression for this study will assume that the probability of the farmers' participation in Agricultural Insurance Scheme will be expressed as

$$P_i \; eb_o+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7\ldots\ldots\ldots (3)$$
$$1+eb_o+b_1X_1+b_2X_2+b_3X_3+b_4X_4+b_5X_5+b_6X_6+b_7X_7$$

P_i range between zero and one and it is non-linearly related to ZiZi is the stimulus index which range from minus infinity to plus infinity and it is expressed as

$$Z_i = \text{in}\frac{P_i}{1-P} = \left(b_o+b_1\right)X_1 + b_2X_2+\ldots\ldots\ldots +b_7X_7+u\ldots\ldots\ldots(4)$$

To obtain the value of Zi the likelihood of observing the sample will be formed by introducing a dichotomous response variable. The explicit logit model will be expressed as

Y = dichotomous response

Variable (1 for farmers that will participate in Agricultural Insurance Scheme; 0 for 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 Association (Number of association of farmer belong to)

X_6 = Accessibility to credit (Amount of loan a farmer accessed in naira)

X_7 = Contact with extension agent (Number of contracts)

b_1- b_7 = Coefficient of Stimulus variable

B_o = Constant term

U = Error team

RESULTS AND DISCUSSION

Determination of Crop Farmers Participation in Agricultural Insurance Scheme

The logit regression model was selected as the lead equation or line of best fit in Table 1. This was based on the co-efficient of multiple determination (R^2) = 0.870. This implies that about 87% of the proportion of the variation in dependent variable Y was explained by the independent variable. The parameters of the logit regression model were estimated using Shazan Statistical Package. The result of the logit regression in Table 1 also shows that age, educational level and accessibility to credit were significant variables that influenced the participation of the farmers in Agricultural Insurance Scheme (10% level of significant) and also farm size was found to be a significant variable at 5% level. The chi-square statistics of 65.245($P<0.1$) shows a good fit for the analysis.

Membership of Association, contacts with Extension agent and Household size were found to be insignificant in influencing the participation of farmers in Agricultural Insurance Scheme. The co-efficient 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 similar study by Mushra and Godwin (2006).

The co-efficient of educational level of the farmers was found to be positive and significant at 10% and this conforms to the *apriori* expectation that the higher the educational level of farmers, the higher participation in Agricultural Insurance Scheme. The co-efficient of accessibility to credit by the farmers was also 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 loan from banks is better facilitated when they have insurance cover and hence, they subscribed to insurance scheme in order to increase their chances in credit accessibility. (Table 1)

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

The most important problem encountered by the farmers under Agricultural Insurance Scheme as presented in Table 2 is the inability of the insurer to indemnify the

Table 1. Logit Regression Result

Variables	Co-efficient	Z-Statistics	Exp(b)
Age(X_1)	-2.424	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 Association (X_5)	1.957 (1.260)	1.553	7.078
Accessibility of Credit (X_6)	0.568 (0.197)	2.877**	1.765
Contact with extension (X_7)	-0.783 (0.640)	1.212	0.457

Field Survey, 2014. Nagelkeke R-squared (R^2) 0.870
-2log likelihood 97.245
Chi square (X^2) 65.245
Note* P<0.1** P<0.05 values in parentheses= Standard Errors

Table 2. Distribution of crop farmers according to their challenges in participating in Agricultural Insurance Scheme

Constraints	No of responses	%	Ranking
Delay in claim payment	87	22.06	1st
Administrative bureaucracy	70	18.56	2nd
Delay in assessment of losses	58	16.08	3rd
Rigorous procedure in claim settlement	56	15.43	4th
Inaccessibility to insurance personnel	53	14.46	5th
Inadequate information dissemination	51	13.50	6th

Field Survey, 2014

delay in claim payment and this constitute the first problem. The payment of indemnity by the underwriter 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 not interested in claim payment when due but they are only interested in collecting premium for their benefit only. Administrative bureaucracy is a second major challenge faced by the farmers in participating in Agricultural Insurance Scheme. This has the tendency of making the farmer withdraw from Insurance Scheme because of the excessive bureaucratic process in the operation of insurance particularly in Nigeria. Untimely assessment of losses by insurance company ranked third in-terms of problem faced by the farmers in their participation in the Scheme. Others include rigorous procedures in claim settlement, inaccessibility to Insurance personnel and inadequate information dissemination and enlightenment.

CONCLUSION

The objective of the study was to determine the factors influencing crop farmer's participation in Agricultural Insurance and also investigate reasons for participation and non-participation by the farmers in the scheme. Structured questionnaires were used to obtain primary data from respondents.

The result of the logit regression analysis showed the co-efficient 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 significance. Farm size was also found to be a significant variable at 5% probability level. The study further revealed that, household size, membership of association and contacts with extension agent were found to be insignificant in influencing the farmer's participation in Agricultural Insurance Scheme. The major challenges faced by farmers in the course of their participation in thescheme were delay in claim payment, administrative bureaucracy, and delay in assessment of losses, rigorous procedure in claim settlement, in accessibility to Insurance personnel and inadequate information dissemination and enlightenment. There is need for continuous andproper sensitization of theon the need and importance of Insurance policy by government, non-governmental agro-service providers and insurance company. And also the insurance industry should ensure prompt delivery of their services to farmers and ensure effective and efficient mode of assessment and payments as at when due.

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