Determinants of crop farmers' utilization of agricultural insurance scheme in Osun State, Nigeria

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ABSTRACT

The Nigeria Agricultural Insurance Scheme (NAIS) was implemented with the aim of cushioning economic losses in agricultural production, and reducing high risk and uncertainties often associated with agricultural enterprise such as pest and disease invasion, crop failure and natural disasters. Hence, this study investigated the determinants of utilization of NAIS among crop farmers in Osun State by examining the socio-economic characteristics, insurance characteristics, knowledge on agricultural insurance scheme, constraints and utilisation of agricultural insurance. Using a multi-stage sampling procedure, 60% of insured crop farmers in the study area were randomly selected given a total of 132 respondents. Data were analysed using descriptive statistics, Chi-square, Pearson Product Moment Correlation and multiple linear regression at $\alpha_{0.05}$. The results reveal that mean age of respondents was 41.9 years, 80.3% were males, 93.9% were married, and 53.0% had tertiary education. The mean monthly income from agricultural activity was ₦27, 231. Over half (50.8%) of respondents derive credit from commercial banks and had an average farm size of 9.30 acres. Radio (0.23) was the most preferred source of information and the use of crop insurance policy as collateral to obtain loan was the reasons for insuring crop. Knowledge of agricultural insurance was high among 54.5% of the respondents. Delay in indemnity by insurance companies (0.84) was the most severe constraints to utilization. About two-third (64.6%) had high level of utilisation of agricultural insurance scheme. Education ($\beta = 0.329$), use of hired labour ($\beta = 0.228$), years of farming experience ($\beta = 0.295$), and constraints to utilisation ($\beta = -0.275$) were predictors of utilization of agricultural insurance. It is recommended that the scheme should hasten the indemnification of clients.

Keywords: Crop farmers, Delayed indemnity, Agricultural insurance scheme utilisation.

INTRODUCTION

Agriculture comprises the entire range of technologies associated with the production of useful products from plants and animals, including soil cultivation, crop and livestock management, and the activities of processing and marketing (Epetimehin, 2010). The agricultural enterprises face a number of risks which are often interconnected. Generally, six types of risk are encountered in agricultural enterprises; these include production risks, price and market risks, regulatory risks, technological risks, financial risks, and human resources risks (Schaffnit-Chatterjee, 2009). The wide range of uncertainties and risks characterising the agricultural business creates the need for insurance of agricultural businesses. The uncertainties and risk could be due to the variable economic and biophysical environments. While some of these sources of risk are also common to other industries, many are specific to agriculture because farmers often sustain losses from a variety of factors which are totally unforeseen at the onset of the farming season. Such risks associated with agriculture and crop production in particular include flood, vagaries in weather conditions, market failure, communal clashes, fire disasters, unpredictable rainfall pattern, economic policy changes, land losses as well as pest and disease attack (Oluyole, 2011).

Sometimes, economic losses and risk are beyond the coping capacity of the farmers. Consequently, farmers are keen to avoid risks which might threaten their livelihoods and this is often reflected in their farming practices. The risk avoidance behaviour influences the levels and types of inputs they use and the aggregate levels of output produced. According to Aderinola and Abdulkadir (2007) high risk and uncertainties often associated with agriculture is one of the reasons for the perpetual food deficit in the country because farmers are often reluctant to adopt output increasing practices, if these are perceived to increase their exposure to risk. At least notionally, there is a trade-off between the levels of risks that farmers can withstand and their level of production. Thus, the need for government at all levels and various institutions to assist farmers through provision of credit and insurance schemes

In the absence of such assistance, Ajakaiye (2001) posited that smallholder farmers in many developing countries of the World, including

Nigeria are trapped in the vicious cycle of poverty. The cycle is characterized by low productivity and low farm income which leave farmers with virtually no savings and capital required to transform their production technology and manage the risk involved in farming. Local farmers often devise helpful measures to minimize risks such as: crop rotation and crop-diversification, intercropping, planting stress-tolerant varieties, tillage systems, share tenancy, contractual inter-linking, development of non-farm sources of income such as handcrafts and handlooms as well as socio-cultural strategies which distribute risks within the extended family, and information financial arrangements. However, some economic losses from agricultural activities are beyond these measures and the problem of residual risks remains, hence the need for a reliable agricultural insurance. World Bank (2005) noted that in situations of economic losses, agricultural insurance schemes can play a major role, and considerably strengthen the security of farmers.

Further to this, due to the risks inherent in crop production which lead to farm income uncertainty and low or no profit, many farmers express fears on their ability to meet overhead costs and family needs. Similarly, many formal lending institutions express fear in farmers' capability to repay loans because of probability of loss in crop production. These institutions try to reduce the likelihood of poor loan recovery by reducing amount of loan to agriculture and in some cases seek unreasonable collateral from farmers before granting loans. This suggest the need for agricultural risk management in form of agricultural insurance to help raise agricultural production by helping farmers invest in more productive agricultural business activities (Nnadi, Chikaire, Echetama, Ihenacho, Umunnakwe and Utazi, 2013).

Insurance is a form of risk management used to guard against contingent losses. It is defined conventionally as the equitable transfer of a risk or loss from one entity to another in exchange for a premium or a guaranteed and quantifiable small loss to prevent a large one (Gollier, 2003). Insurance comes in different forms. The agricultural insurance is a special line of property insurance applied to agricultural firms. Agricultural insurance, in its widest sense may be defined as the stabilization of income, employment, price and supplies of agricultural products by means of regular and deliberate savings and accumulation of funds in small instalments by many in favourable time periods to defend some or few of the participants in bad time periods (Arene, 2005).

Therefore, the Agricultural Insurance Scheme (NAIS) was established to offer protection to local farmers from effects of natural disasters. Specifically, the scheme was designed to promote agricultural production; provide financial support to farmers in the event of losses arising from natural disasters; increase the flow of agricultural credit from lending institutions to the farmers and minimize the need for emergency assistance provided by the government during periods of agricultural disaster (NAIC, 2007). However, it is been observed that the utilization of agricultural insurance seems to be at low ebb and suggests a need to x-ray the factors determining the use of agricultural insurance scheme. Several studies such as Akinrinola and Okunola (2014), Farayola, Adedeji, Popoola and Amao (2013) Nwosu, Oguom, Lemchi. Ben–Chendo, Henri-Ukoha, Onyeagocha and Ibeawuchi (2010) investigated the Nigeria Agricultural Insurance Scheme. Yet, no study has highlighted the determinants of utilisation of Nigeria Agricultural Insurance Scheme among crop farmers. It was against this backdrop that the study was carried out to ascertain the determinants of crop farmer's utilization of Agricultural Insurance Scheme in Osun State, Nigeria with specific highlights on the socioeconomic characteristics, insurance characteristics of respondents, knowledge on agricultural insurance, constraints to utilization of Agricultural Insurance Scheme and utilization of Agricultural Insurance Scheme.

Study Hypotheses

There was no significant relationship between selected socioeconomics characteristics and utilization of Agricultural Insurance Scheme and there was no significant contribution of independent variables to utilization of Agriculture Insurance Scheme.

METHODOLOGY

Study area - The study was carried out in Osun State, Nigeria. The state is located in the South western part of Nigeria and covers an area of approximately 14,875km^2. Osun state was carved out of Old Oyo State on August 27, 1991. Its capital is Oshogbo. Osun State is landlocked and occupies 9,251 square kilometres. Osun State shares borders with Kwara State to the North, Oyo State to the West, Ogun State to the South, and Ondo and Ekiti States to the East. It has 3 senatorial district which are Osun south, north and central. Each senatorial district has 10 local government areas. It has a population of three million, four hundred and twenty three thousand, five hundred and thirty five people (3,423,535) (National Population Commission, 2006).The people of the state are mostly farmers, producing such food crops such as yam, maize, cassava, beans and cocoyam, and cash crops which include kolanut, cocoa and oil palm.

Population of the study - The population for the study was made up of all insured crop farmers in Osun State.

Sampling procedure and sample size - Multi stage sampling procedure was used in selecting respondents for the study. Osun state is divided into three senatorial districts which are Osun East, Osun Central and Osun West. Each senatorial district has 10 LGAs and 10% of the LGAs were selected which were Ilesha west, Odo-otin and Iwo Local Government Areas. From the list of Nigeria Agricultural Insurance Scheme farmer, Ilesha west and Odo-otin had 50 insured crop farmers each, while Iwo had120 insured crop farmers. Simple random sampling was used to select 60% of the insured crop farmers from each local government areas. To give a sample size of 132 respondents

Method of data collection and analysis - Interview schedule was used to collect data from the respondents. Data collected were analyzed with the aid of descriptive and inferential statistics. Descriptive tools such as frequency, distribution, mean, percentages and inferential statistics used was chi-square, PPMC Pearson Product Moment Correlation, and multiple regression

Model specifications of the determination of utilisation of agricultural insurance scheme - In order to assess the factors affecting the utilisation of agricultural insurance scheme, a multiple linear regression model was run using the Ordinary Least Squares (OLS) method. The level of significance of the variables was tested using a t-test at a 5% level of significance. A constant (α) indicates the rate of utilisation of insurance scheme holding other factors constant. The error term (μ) was included to account for the other factors other than the tested variables.

A Multiple Linear Regression Model of the factors affecting the utilisation of agricultural insurance scheme was specified as below:

$$UAIS = \alpha + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \beta6X6 + \beta7X7 + \beta8X8 + \beta9X9 + \beta10X10 + .\mu$$

Where:

UAIS = utilisation of agricultural insurance scheme (dependent Variable)

α = Constant (intercept)

X1 = Age of the farmer in years

X2 = sex (male=1, otherwise=0)

X3 = Marital status (married=1, otherwise=0)

X4 = Education level (tertiary=1, otherwise=0)

X5 = Source of credit (bank=1, otherwise=0)

X6 = Source of labour (hired labour=1, otherwise=0)

X7 = Farm size in acres

X8 = Experience in cropping in years

X9 = Knowledge of NAIS

X10 = Constraints to utilisation

μ = Random error term

Utilisation of agricultural insurance is expected to change by a certain factor, β (coefficient) if any of the above variables increases by one unit.

Measurement of Variables

Dependent Variable - Utilization of Agricultural Insurance Scheme was measured by construction of statement across components of the scheme on a 3 point scale of never, sometimes and always and scored 0, 1 and 2 respectively. The minimum score was 3 and maximum 14.

Independent variables

Socioeconomic characteristics of respondents - Age, years of farming experience, farm size and income were measured in interval level. While, sex, marital status, level of education, household size, religion, and membership in social association were measured at nominal level

Insurance characteristics of respondents - Source of information on agricultural insurance scheme, reasons for insurance, amount insurance covers, years of insurance, claim, loss and compensation paid

Knowledge of agricultural insurance - Lists of ten knowledge items was presented to test the knowledge on agricultural insurance using two response options of "YES" and "NO" options. Correct responses were scored 1, while incorrect responses were scored 0. Level of knowledge was categorised into high and low using the mean as benchmark.

Constraints in accessing agricultural insurance - Twelve (12) possible constraints to utilization of agricultural insurance were presented and respondents were asked to indicate the level of severity. This was measured on a 3 point scale of Not severe constrain, severe constraints and very severe with assigned scores of 0, 1 and 2, respectively. The mean scores were used to rank the constraints in order of severity

RESULTS AND DISCUSSION

Socioeconomic characteristics of respondents

The age distribution of the respondents ranged between 26 and 66 years. Results on Table 1 reveal that 43.9% of respondents were between 36 and 45 years, while 22.7% were between 46 and 55 years. Respondents' mean age was 42 years. It can be inferred that majority of the insured crop farmers are middle aged. This may be due to the fact that it is within the age bracket that people are innovative (Asiabaka, 1998). Also result reveals that 80.3% of the respondents were males, while 19.7% were females. This implies that more males are involved in crop production and insured their farms compared to females. This is in consonance with Ayoola (2009) that male farmers are involved in crop production, while female farmers engage in the other value chain activities in agricultural enterprise like processing and marketing. Also it suggests that more male farmers insure their crop than females. This may be because males are decision makers and control the funds which are needed in insurance.

Result on Table 1 further reveals that 93.9% of the respondents were married, while 12.0% were single. This implies that majority of the respondents were married as crop farming can sustain or help the family to ensure steady flow of income and a need to insure their farming enterprise. This corroborates the findings of Falola *et al* (2013) that crop production is a means of catering for households. On educational attainment, Table 1 reveals that a larger percent (53.0%) of respondents had tertiary education and27.3% had secondary education. This implies that majority of the farmers had secondary school education and above. Education could affect the source and utilization of information which is important for utilization of insurance scheme. This corroborates Oladeji and Oyesola (2000) that education plays a major role in information utilization as it necessary for proper processing of information.

Results on Table 1 reveal that over 40% of respondents earned above ₦40, 000.00k monthly and30.3% of the respondents earned between ₦25,000 and ₦40,000 monthly from agricultural activities. The mean income of respondents was ₦27, 231. This implies that agricultural activities are profitable enterprises. This is in-line with the findings of Amaza and Maurice (2005) when they opined that farmers earn as high as ₦22, 100 to ₦32,000 monthly from agricultural activities

Also, result on Table 1 reveals that the mean year of experience of respondents was 18.5 years. About 40% had farming experience of between 1 and 10 years, while 33.3% had between 11 and 20 years of experience. This suggests that farmers in the study area have ample experience in crop production and have been engaged in crop production for a relatively long time. This is in-line with Muhammad-Lawal, Falola and Omotesho (2009) that crop production is an age-long venture in the rural areas.

Respondents' source of credit ranged from bank loan (50.8%) and cooperative society (22.7%) (Table 1). This implies that a larger percentage of respondents sourced credit from the bank, which may be a reason for insuring their farms. As insurance will provide security to pay loan in eventuality of disaster or crop failure also banks required that farmers insured their farms. This is consistent with Churchill (2008) who opined that insurance provide greater economic and psychological security to the poor as it reduces exposure to multiple risks and cushions the impact of a disaster

The mean farm size was 9.30 acres, 43.9% of respondents cultivated had between 2 and 9 acres as revealed on Table 1. This implies a relatively large acreage of land are cultivated by crop farmers in the study area. Also majority (78.8%) of respondents used hired labour as compared to only 10.6% that use self-labour. This implies the predominance of hired labour crop farmers. The use of hired labour is likely due to the high labour required for crop production, large farm size and the need to enhance production. This corroborates the findings of Fakayode *et al* (2012) that in order to improve productivity crop farmers employ hired labour due to the hectic and time consuming nature crop production.

Table 1: Distribution of respondents by their socioeconomic characteristics

Variables	Categories	Frequency	Percent	Mean
Age (years)	26-35	26	19.7	
	36-45	58	43.9	
	46-55	30	22.7	41.9 years
	56-66	18	13.6	
Sex	Male	106	80.3	
	Female	26	19.7	
Marital status	Single	8	6.1	
	Married	124	93.9	
Household size	1-3 persons	14	10.7	

Variables	Categories	Frequency	Percent	Mean
	4-6 persons	55	41.3	5.9 persons
	7-9 persons	56	42.7	
	10-12 persons	7	5.3	
Education level	No formal Education	2	1.5	
	Primary	24	18.2	
	Secondary	70	53.0	
	Tertiary	36	27.3	
Monthly Income (Naira)	Less than 10,000	4	3.0	
	10,000 -25,000	30	22.7	
	Above 25000-40,000	40	30.3	N27, 231
	Above 40,000	58	43.9	
Years of cropping	1-10 years	52	39.4	
	11-20 years	44	33.3	18.5 years
	21-30 years	18	13.6	
	31-40 years	18	13.6	
Sources of credit	Personal	7	5.3	
	Family	20	15.2	
	Cooperative	30	22.7	
	Money lender	8	6.1	
	Bank	67	50.8	
Farm size (acres)	< and equal 1	20	15.2	
	2-9	58	43.9	9.30 acres
	10-17	34	25.8	
	18-25	12	9.09	
	>25	8	6.06	
Sources of labour	Self	14	10.6	
	Family	4	3.0	
	Hired	104	78.8	
	Association	10	7.6	

Insurance characteristics of insured crop farmers

Results on Table 2 reveal that the mean amount insurance covered was ₦316,667. Majority (78.5%) of the respondents' insurance covered between ₦100,000 and ₦500,000 annually, 12.3% covered less than ₦100,000, while only 3.1% insured above a million naira. More than two-third (69.7%) of the respondents had insured for between 1 and 3 years, and the mean years of insurance was 2.67 years. This suggests that the agricultural insurance scheme is yet to be fully accepted by crop farmers. Although half of insured crop farmers had ever suffered loss, only 13.6% had ever received claim. Results on Table 2 also reveal that radio (95.5%), cooperative society (81.1%), television (74.2%), extension agents (69.7) and newspapers (33.3%) were the sources of information used for agricultural insurance. Radio (95.5%) was the most preferred source of information, followed by cooperative society (81.1%) and television (74.2%). This implies that radio and cooperative society were used to access information on crop insurance. The high use of cooperative was because majority of the farmers belonged to cooperative society, while the high use of radio likely because it is easy to use and it is relatively cheap. This is in consonance with the findings of Fadairo, Olajide and Yahaya (2011) that radio is one of the most widely used source of information among farmers.

Table 2: Distribution of respondents by insurance characteristics

Variables	Frequency (n=132)	Percentage	Mean
Amount insurance cover (Naira)			
Less than 100,000	16	12.1	
100,000 to 500,000	104	78.8	₦316,667
Above 500,000 to 1,000,000	8	6.1	
Above 1,000,000	4	3.0	
Years of insurance			
Less than a year	12	9.1	
1 –3 years	92	69.7	2.67 years
4 - 5 years	28	21.2	

Variables	Frequency (n=132)	Percentage	Mean
Suffered loss			
No	66	50	
Yes	66	50	
Received claim			
No	114	86.4	
Yes	18	13.6	
Sources of information on insurance*			
Radio	126	95.5	0.95
Cooperative society	107	81.1	0.81
Television	98	74.2	0.74
Extension agent	92	69.7	0.70
Newspaper	44	33.3	0.33

*Multiple responses

Table 3 reveals that the use of crop insurance policy as collateral to obtain loan (3.40) ranked first among reasons for insuring crop, followed by cushioning the effect in case of loss (3.00) enhancement of confidence for greater investment in crop production (2.50). This implies that insurance policy is one of the requirements needed to access agricultural loans. Thus, this indicates that the objectives of the Nigerian Agricultural Insurance Scheme to increase access of farmers to credits is been achieved. The result is similar to Akinrinola and Okunola (2014) who found that all participants of agricultural insurance scheme in Ondo State used their insurance policy to obtain loan.

Table 3: Distribution of respondents by reason for insuring crops

Reason for insuring crop	Weighted Sum	Mean	Rank
Use of crop insurance policy as collateral to obtain loan	221	3.40	1st
To cushion the effect in case of loss	198	3.00	2nd
Enhance confidence for greater investment in crop production	165	2.50	3rd
To benefit from government programmes	147	2.29	4th
To ensure a considerable measure of security in farm income	148	2.27	5th
To increase profits	123	1.95	6th

Respondents' knowledge on agricultural insurance scheme

Table 4 reveals that respondents were knowledgeable on the ownership of Nigeria Agricultural Insurance (100%), how life insurance works (97.0%), the function of a broker in insurance sales (95.5%) and who an underwrite is (83.3%). Furthermore, Table 5 reveals that 54.5% of respondents had high level of knowledge on agricultural insurance scheme. This implies that a larger percent are knowledgeable on Nigeria Agricultural Insurance Scheme

Table 4: Distribution of respondents by knowledge of agricultural insurance scheme

Knowledge	Incorrect		Correct	
	Freq.	%	Freq.	%
Nigeria agricultural insurance scheme is owned by Government	0	0	132	100
Life insurance is an insurance is kept in force throughout a person's whole life and which pays a benefit upon the persons death	4	3.0	128	97.0
Broker is an insurance sales person that searches for client	6	4.5	126	95.5
Underwrite is an individual trained in evaluating risk and determining rates and coverage for them	22	16.7	110	83.3
Agent is an individual who sells and services insurance policies	26	19.7	106	80.3
The scope of protection provided under an insurance policy is called coverage	30	22.7	102	77.3
Premium is not the price of insurance protection for a specialized risk for a specified period of time	38	28.8	94	71.2
Destruction of the victim of a loss by payment repair or replacement is called indemnity	56	42.4	76	57.6
Underwriting is not the process of selecting risk for insurance and	56	42.4	76	57.6

Knowledge	Incorrect		Correct	
	Freq.	%	Freq.	%
classifying them according to their degree of insurability A circumstance that increase the likelihood or probable severity of profit is called hazard	64	48.5	68	51.5

Table 5: Categorisation of respondents by knowledge of agricultural insurance scheme

Knowledge	Frequency	Percent	Min.	Max.	Mean	S D
Low	60	45.5	4	10	7.71	1.62
High	72	54.5				
Total	132	100				

Constraint to use of agricultural insurance

Table 6 presents the constraints to utilization of agricultural insurance. It reveals that delay in indemnity by insurance companies (0.84) was the most severe constraints to utilization of agricultural insurance, excess bureaucracy in administrative process (0.83) ranked second, while illiteracy among farmers (0.73) and technicalities involved in utilization (0.56) were ranked third and fourth, respectively. This implies that delay in indemnification of loss to client was the most severe constraint that has mostly affected the utilization of the scheme. This supports the findings of Farayola *et al* (2013) that the major problem faced by the farmers under agricultural insurance scheme was that of delay in indemnity.

Table 6: Distribution of respondents by constraint to use of agricultural insurance scheme

Constraints	Not a constraints		Mild constraints		Severe constraints		Mean	Rank
	F	%	F	%	F	%		
Delay in indemnity by insurance companies	60	45.5	32	24.2	40	30.3	0.84	1st
Excess bureaucracy in administrative process	56	42.4	42	31.8	34	25.8	0.83	2nd
Illiteracy among farmers	50	37.9	68	51.5	14	10.6	0.73	3rd
Technicalities involved in utilisation	72	54.5	46	34.8	14	10.6	0.56	4th
Lack of access to agricultural insurance	68	51.5	60	45.5	4	3.0	0.52	5th
High cost of agricultural insurance policy	80	60.6	44	33.3	8	6.1	0.45	6th
Lack of finance to obtain insurance policy	80	60.6	50	37.9	2	1.5	0.41	7th
Lack of information on insurance policies	88	66.7	36	27.3	8	6.1	0.39	8th
Cultural beliefs on agricultural insurance	94	71.2	34	25.8	4	3.0	0.32	9th
Religious beliefs on agricultural insurance	102	77.3	28	21.2	2	1.5	0.24	10th

Utilization of agricultural insurance

Table 7 shows that reinsure of policy when it expires (1.04) was the most used aspect of insurance policy scheme, while payment of premium (0.91) and payment to obtain policy (0.91) were second. Submission of valid document after clients suffered loss (0.90) ranked fourth. It is noted that getting of claims when loss occurred (0.10) was the least. This implies that majority of the respondents did the necessary obligation necessary for their insurance policy and submit a valid document when they suffer loss. However, most of are yet to get benefits even as and when due. This could be a reason why some farmers are apprehensive about agricultural insurance. Furthermore, Table 8 reveals that 64.6% of respondents had high level of utilisation of agricultural insurance scheme. This may be necessitated by the fact that agricultural insurance is a component under the Quick Impact Intervention Programme (QIIP) of Osun State government.

Table 7: Distribution of respondents by utilization of agricultural insurance

Utilization of agricultural insurance	Never		Seldom		Always		Mean	Rank
	F	%	F	%	F	%		
Do you insure when your policy expires	4	3.0	2	1.5	126	95.5	1.04	1st
How often do you pay your obtain policy	4	3.0	2	1.5	126	95.5	0.91	2nd
How often do you pay your premium	4	3.0	2	1.5	126	95.5	0.91	2nd
Do you submit a valid document after you suffered loss	35	26.5	14	10.6	83	62.9	0.90	4th
How often do NAIC officers visit your farm	12	9.1	54	40.9	66	50.0	0.84	5th
Do NAIC entertain your claims	53	40.2	52	39.4	27	20.5	0.47	7th
How often do you get your claim	115	87.1	2	1.5	15	11.4	0.10	8th
How often do engage the service of a broker	112	84.8	13	9.8	7	5.3	0.07	6th

Table 8: Categorisation of respondents by utilisation of agricultural insurance scheme

Utilisation	Frequency	Percent	Min.	Max.	Mean	SD
Low	47	35.6	3	14	9.79	2.15
High	85	64.4				
Total	132	100				

Hypotheses testing

Hypothesis one tested for significant relationship between the selected socio economic characteristics of respondents and their level of utilisation of agricultural insurance scheme. Results on Table 9 reveals that there was significant relationship between years of farming experience (r= 0.252 p=0.003) and utilisation of agricultural insurance scheme. This also suggests that that farming experience could enhance utilization of agricultural insurance in order to cushion effect of loss. Significant relationship existed between level of education (χ^2 = 25.826, p=0.000) and utilisation of agricultural insurance. This implies that utilisation of agricultural insurance is determined by the level of education of the respondents.

Table 9: Chi-square and correlation analysis of selected socioeconomic characteristics and utilisation of agricultural insurance scheme

Variable	χ^2	Cc	Df	r	P	Decision
Level of education	25.826*	0.405	3		0.000	Significant
Income	4.024	0.172	3		0.259	Not significant
Age				0.064	0.469	Not significant
Farming experience				0.252*	0.003	Significant
Farm size				0.072	0.409	Not significant

*= significant at p≤ 0.05

Determinants of utilisation of agricultural insurance scheme

Multiple linear regression analysis was used to determine utilisation of agricultural insurance scheme in the study area. The result also reveals that the R^2 value was 0.325 which indicates that the independent variables in the regression model explain 32.5% of the dependent variable (utilisation of agricultural insurance scheme). Tertiary education (β=0.329), years of farming experience (β=2.76), use of hired labour (β=2.73) and constraints to utilisation (β=-0.275) significant contributed to utilisation of agricultural insurance. This implies that having a tertiary education, higher years of farming experience, use of hired labour and constraints to utilisation were predictors of utilisation of agricultural insurance. The coefficient of constraints was negative implying that with increase constraints there is decrease in utilisation of agricultural insurance.

Table 10: Determinants of utilization of agricultural insurance Scheme

Explanatory variable	Standardized error	β- value	t-value	Sig value
(Constant)	2.205		5.300	0.000
Age	0.023	-0.129	-1.279	0.204
Sex	0.444	0.025	0.300	0.765
Married	0.804	0.046	0.510	0.611
Tertiary education	0.437	0.329	3.633	0.000
Bank as source of credit	0.346	-0.010	-0.127	0.899
Hired labour	0.433	0.228	2.764	0.007
farm size	0.020	0.082	0.897	0.371
years of farming experience	0.021	0.295	2.734	0.007
Knowledge of NAIS	0.117	0.023	0.264	0.792
Constraints to utilization	0.043	-0.275	-3.212	0.002

$R^2 = 0.325$ F = 4.78 R = 0.570 Adjusted R^2=0.26 Std. Error of the estimate= 1.85

* Significant at 5% level of significance

Table 11: Multiple Regression analysis utilization of agricultural insurance scheme

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	198.207	12	16.517	4.779	0.000
Residual	411.270	119	3.456		
Total	609.477	131			

Dependent Variable: NAIS utilisation

Predictors**:** (Constant): age, sex, married, tertiary education, bank as source of credit, hired labour, farm size, years of cropping experience, knowledge of NAIS, attitude, constraints and sources of information

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that utilisation of agricultural insurance was high, use of insurance policy to collect loan was the main reason for utilisation, while delay in indemnity by insurance companies was the most severe constraint. Level of education, use of hired labour, years of farming experience and constraints to utilisation were the key predictors of utilisation of agricultural insurance. It is therefore recommended that the scheme should hasten the indemnification of client and increase the awareness of other benefits of the scheme so that farmers will take insurance cover and not because it is a prerequisite for loan accessibility.

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