

AGRICULTURAL INSURANCE AND FARMING SYSTEM IN EKITI STATE, NIGERIA:-A COMPARATIVE ANALYSIS.

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Abstract

A comparative study of Insured and uninsured farmers was carried out to affirm the effectiveness or otherwise of Agricultural insurance scheme on farming system in Ekiti State, Nigeria. Both purposive and randomized sampling techniques were used to select seventy five (75) insured and seventy five (75) uninsured farmers used for the study.

The data collected were analyzed using descriptive statistics and Probit regression model. The result of the analysis revealed that majority of the respondents was young male farmers and married with an average family size of six members. They are highly experienced farmers. The Probit regression analysis showed that level of education, farming experience and mode of farming all significantly correlated with the adoption of agricultural insurance policy by farmers. The findings affirmed that agricultural insurance improves agricultural productivity thereby improve the standard of living of the farmers in Ekiti State and it was recommended that government should indemnify the farmers affected by natural disasters and hazards promptly and timely so that the purpose of adopting insurance is achieved.

The result of the t-test shows that there is a significant difference between the insured respondents and the uninsured respondents according to their response to risk, production practices used on the farm and the farm output.

Keywords:- Agricultural Insurance, Farming System, Comparative and Analysis.

Introduction

Agriculture remains an important economic sector in many developing countries. It is a source of growth and potential sources of investment opportunities for private sector. Two third of the world's agricultural value added is estimated to be created in developing countries (World Bank, 2008). In agro-based economies, which characterized the most sub-Saharan African, agriculture generates 29% of the GDP average. In transforming countries i.e. countries in which agriculture is no longer the major source of their economic growth such as South and East Asia, Middle East and North Africa, the combination of agriculture to GDP is much lower (Mahul and Stutely, 2010). Nearly half of the world's population lives in the rural area, and agriculture is the source of livelihood for an estimated 86% of these people (World Bank, 2008). Further analysis by World Bank (2008), revealed that agriculture provides employment to 68% of the population in agricultural based countries and 48% in transforming economies. About 94% of the rural households live on agricultural activities in agro-based countries; this portion falls to 76% in transforming economies.

Agriculture can contribute to spurring growth, poverty reduction, employment generation and

sustaining the environment. GDP growth in the agricultural sectors at least twice as effective in poverty reduction when compared to non-agriculture GDP growth (World Bank, 2008). Productivity gains in agriculture are necessary for self- sustaining economic development in most developing countries (UNCTAD, 1994 and Mahul, 2010).

Agriculture has always been a risky business, unlike other sectors. A very critical problem faced by farmers and agricultural business enterprises is that it is characterized by considerable risk and uncertainties, which stem from its absolute dependence in nature. These risks are unforeseen and can go beyond the control of the farmers. Farmers face considerable losses resulting from the risk of investment and uncertainties. As a consequence to this, Ajakaye (2001) opined that small farmers in developing countries of the world including Nigeria are trapped in the vicious cycle of poverty, via - low productivity and low farm income and little savings. Agricultural activities suffer from adverse natural hazards such as insect damage and poor weather conditions that negatively affect productivity. The economic cost of major climate disaster increase further in the future due to global warming and climate change.

Agriculture insurance as defined by Mabawonku (1998) as the elimination of the uncertain risk of loss for the individual through the combination of a vast number of a similarly exposed person who can contribute to a common fund, premium payment sufficient to make good the loss caused by any one or individual. The above definition is consistent with Hansel (1998), which defines insurance as a social device providing financial compensation for the effects of misfortune, the payment move from accumulated of all parties particularly in the scheme. The Nigeria Agricultural Insurance scheme (NAIS,1989), saw Agricultural insurance as the stabilization of income, employment, prices and supplies of Agricultural products by means of regular and deliberate savings and accumulations of funds in small installment by many farmers in favourable time period, to defend some or a few of the participants in bad time periods.

Agricultural insurance as an alternative for risk management actually started as crop hail insurance in Europe more than 100 years ago and spread to the United States at the beginning of the century. It has since been embraced by a lot of developed and developing countries of the world. Such countries include; USA, Canada, Japan, Mexico, Brazil, Bolivia, Costa Rica, Panama, Mauritius, India, Australia, Iran, Sri Lanka, Zambia, Philippine, Israel, Chile, Jamaica, Egypt, Cyprus, Sweden, Bangladesh and Venezuela with varying degrees of successes and failures.

In Nigeria, Commercial Agricultural Insurance scheme was pioneered by Niger insurance in May 1987. National Insurance Cooperation of Nigeria (NICON) wholly owned by the Federal Government and the National Co-operative Insurance Society of Nigeria (NCISN) were also known to have operated insurance schemes with agricultural implication on a limited commercial scale. In addition, some banks such as the United Bank for Africa (UBA) and the Union Bank of Nigeria which were actively involved in giving good facilities to the Agricultural sector had to raise the sum assured of life insurance of loan. Agricultural insurance scheme (NAIS), which was formerly launched on the 15th of December, 1987, was later followed by the incorporation of the Nigeria Agricultural Insurance Company (NAIC) in 1988 to implement the scheme (Aina and Omonona, 2012).

The government introduced the Agricultural insurance program with the triple aim of broadening farmers access to farm resources; positively changing farmers attitude to risk in their

choice of resource use and to achieve increased food supplies in the market (Olubiyo, *et.al*, 2009).

Agricultural Insurance was often funded by the government. The government insurance scheme was criticized inefficient due to the co-variance of risks and the problems irregularity of information that are prevalent in developing Agriculture. Also, the benefits are not commensurate with the financial investment committed. Given the low incomes, the small sizes of holdings of farms, ignorance and poverty, the peasant farmers are reluctant to patronize the insurance market. . This study focuses on investigating the influence of Agricultural Insurance scheme on farming practices in Ekiti State. The specific objectives are to

- describe the socio-economic characteristics of the farmers that insured their farm as against those farmers who did not.
- compare the productivity of insured and uninsured farmers based on the income generated per hectare.
- determine the factors influencing the adoption of insurance policy among the respondents.

Research hypothesis: The null hypothesis stated that there is no significant difference between the productivity of the insured farmers and the uninsured farmer's response to risk production and the output generated.

Methodology

Area of study

The study was carried out in Ekiti State, Nigeria. The state is situated entirely in the tropics. It was created October 1st 1996 from the old Ondo State. It is located between longitudes 40 degree 45" West and 50 degree 45" East of the Greenwich meridian and latitude 7 degree 15" and 8 degree 15" North of the Equator (Carim, 2002). The total land area is about 580,460sq.km with a population of 2,384,212 million (NPC, 2006).

Population and sampling techniques

The populations for the study are farmers in Ekiti state (Insured and Uninsured farmers). Both purposive and simple random sampling techniques were used in the study. The purposive sampling was used to select 75 farmers involved in the Agricultural Insurance Scheme in the state while a simple random sampling was used to select 75 farmers who did not participate in any insurance programme. The data was collected through the aid of a well-structured questionnaire. The data collected were analyzed with the combination of both qualitative and quantitative methods such as,

frequency counts and percentages, likert scale, t-test and Probit regression analysis.

The frequency counts and percentages were used to describe the socio-economic characteristics of the respondents. The Likert-type scale was employed to determine the attitude of the respondents to Agricultural Insurance. T-test was employed to differentiate between the productivity of the farmers that participated in the Agricultural Insurance scheme and those that did not, while Probit regression model was used to determine the factors influencing participation of farmers in agricultural insurance scheme.

Probit regression and analysis:

Model Specification:

The Implicit is given as:

$$Y = f(X_1, \dots, X_n) + u$$

Where, Y= participation in Agricultural Insurance.

$X_1 = \dots, X_n$ = explanatory variables.

U = error term.

X_1 = age of the respondents.

X_2 = sex of the respondents.

X_3 = marital status of the respondent

X_4 = family experience of the respondents.

X_5 = level of education of the respondents.

X_6 = household size of the respondents.

X_7 = mode of farming of the respondents.

Results and Discussion

Socio-economic characteristics of the respondents

The age of the farmer is an important factor influencing his level of output especially in the agricultural economy which is characterized by high labour requirement. Data in Table 1 shows that most of the farmers were within the age range of 31-50 years. It implies that they are in the working age and are expected to be energetic and warm towards participating in Agricultural Insurance programme. Most of the respondents are male. The sexes of the respondents are not evenly distributed. Male dominated the farming activities in the study area. The study is in support of Toluwase *et al* (2009) which affirm the dominant of farming profession in the study area by men. The figure revealed that 73.3% of insured farmers were male while the remaining 26.7% were female. On the other hand, among the uninsured farmers 80% were male and the remaining 20% were female. Most of them were married as 84% of the insured farmers and 93.3% of the uninsured farmers and hence, are expected to have family responsibilities.

The educational status of the respondents revealed that among the insured farmers, 48% had B.Sc/HND as against 12% in the uninsured farmers' category and 16% among insured farmers had post graduate certificates as against 6.7% among the uninsured farmers. The insured farmers are more educated than the uninsured farmers and this might be responsible for their awareness of insurance policy in farming activities and its participation. The finding of Imoudu and Toluwase (2005) revealed that education had a positive impact to usage of technological innovations hence, educated farmers adopt more of the agricultural policies such as insurance, improved agricultural technologies and farming practices than uneducated farmers.

The size of household among the respondents shows that 57.3% of insured farmers had between 1-3 household sizes as against 37.3% among the uninsured farmers while 5.3% of insured farmers had household size above 9, while it was 6.7% among the uninsured category. One of the expectations in production function is that output is positively affected by family labour which is a function of the household size. In the olden days, it is common that farmers marry many wives for the purpose of having many children to assist on their farm. The need for hired labour is reduced as most of the farming activities would be easily done by members of the family. However, due to civilization brought about by education, many farmers do not have large family due to high cost of living. The low family size among the insured farmers might be as a result of their higher level of education.

From the table, the insured farmer's cultivated larger hectareage of farmland than the uninsured farmers as 10.7% cultivated above 10 hectares while it was 8.7% among the uninsured farmers. In the same vein, 48% of the insured farmers cultivated between 1-3 hectares as against 56% in the uninsured category. This shows that most of the respondents engage in small scale farming.

Farming experience of farmers is also an important factor influencing the level of output. It is expected that farmers that have been farming for years have more experience concerning methods of production to adopt, cropping pattern, good crops for intercropping, quantity of input like fertilizer, herbicides, etc. and all these factors positively correlate with the level of output. The table indicated that 46.7% of insured farmers had 15 years of farming experience as against 38.7% of the uninsured farmers and 32.9% of the insured farmers had less than 5 years of farming experience compared to 25.3% of the uninsured farmers. In

essence, this shows that insured farmers are more experienced in farming activities; this might be responsible for their more years of farming experience and higher hectareage of land cultivated.

The table also revealed that 94.7% of the insured farmers were aware of the agricultural insurance as against 42.7% of uninsured farmers. The level of

awareness among the insured farmers may have encouraged their participation in the insurance policy.

Membership of cooperative society revealed that insured farmers participated more in cooperative society than the uninsured farmers as 69.3% were members of cooperative societies as against 64% in the uninsured farmer's category.

Table 1: Socio-economic characteristics of the respondents.

Variables	Insured farmers		Uninsured farmers		Pooled data	
	No	%	No	%	No	%
Age (Years)						
21-30	4	5.3	14	18.7	18	12.0
31-40	32	42.7	30	40.0	62	41.3
41-50	19	25.3	15	20.0	34	22.7
Above 50	20	26.7	16	21.3	36	24.0
Total	75	100.0	75	100.0	150	100.0
Sex						
Male	55	73.3	60	80.0	115	76.7
Female	20	26.7	15	20.0	35	23.3
Total	75	100.0	75	100.0	150	100.0
Marital Status						
Single	4	5.3	3	4.0	7	4.7
Married	63	84.0	70	93.3	133	88.7
widow	8	10.7	2	2.7	10	6.7
Total	75	100.0	75	100.0	150	100.0
Level of Education						
Primary	4	5.3	27	36.0	31	20.7
Secondary	11	14.7	30	40.0	41	27.3
OND/NCE	12	16.0	4	5.3	16	10.7
HND/BCS	36	48.0	9	12.0	45	30.0
Post graduate	12	16.0	5	6.7	17	11.3
Total	75	100.0	75	100.0	150	100.0
Household size						
1-3	43	57.3	28	37.3	71	47.3
4-9	28	37.3	42	56.0	70	46.7
Above	94	5.3	5	6.7	9	6.0
Total	75	100.0	75	100.0	150	100.0
Farm size (Ha)						
1-3	36	48.0	48	64.0	84	56.0
4-6	27	36.0	22	29.3	49	32.7
7-9	4	5.3	0	0.0	4	2.7
>10	8	10.7	5	6.7	13	8.7
Total	75	100.0	75	100.0	150	100.0
Farming experience (years)						
Less than 5	24	32.9	19	25.3	43	28.7
5-10	12	16.0	25	33.3	37	24.7
11-15	4	5.3	2	2.7	8	5.3
Above 15	35	46.7	29	38.7	64	42.7
Awareness of Agric. Insurance						
Yes	71	94.7	32	42.7	103	68.7
No	4	5.3	43	57.3	47	31.3
Total	75	100.0	75	100.0	150	100.0
Membership of cooperative society						
Yes	52	69.3	48	64.0	100	66.7
No	23	30.7	27	36.0	50	33.3
Total	75	100.0	75	100.0	150	100.

Source: Field Survey, 2014.

Farming related activities of the respondents.

Data in Table 2 reveals that 46% of the respondents engage in part time farming while 54% of the respondents engage in full time farming. The table also reveals that 42.7% of the respondents are involved in mono cropping, while 44.7% of the respondents are involved in mixed cropping and 12.7% of the respondents are involved in crop rotation. The implication of this is to allow for safety net in case of crop failure in one or two enterprises to reduce the effects of risk and uncertainties through diversification. Also, 16.0% of the insured respondents utilize family labour and 32.0% of the uninsured respondents utilize family labour. In the same manner, 84.0% of the insured

farmers utilize hired labour as against 68.0% of their counterparts. 47.3% of the respondents utilize local inputs while 52.7% of the respondents utilize modern inputs. The breakdown of this revealed that 68% of the insured farmers utilize modern input as against 37.3% of the uninsured. The higher numbers of the uninsured farmers who utilize local inputs such as fertilizer, herbicides e.t.c might be responsible for more numbers of family labour employed. The higher number of insured respondents engaging in full time farming may be responsible for their participation in insurance policy for their farming enterprise.

Table 2: Farming related activities of the respondents.

Variables	Insured farmers		Uninsured farmers		Pooled data	
	No	%	No	%	No	%
Method of farming						
Part time	36	48.0	33	44.0	69	46.0
Full time	39	52.0	42	56.0	81	54.0
Total	75	100.0	75	100.0	150	100.0
Farming system						
Mixed Farming	51	68.0	13	17.3	64	42.7
Mixed cropping	12	16.0	55	73.3	67	44.7
Crop rotation	12	16.0	7	9.3	19	12.7
Total	75	100.0	75	100.0	150	100.0
Labour utilized						
Family labour	12	16.0	24	32.0	36	24.0
Hired labour	63	84.0	51	68.0	114	76.0
Total	75	100.0	75	100.0	150	100.0
Input utilized						
Local	24	32.0	47	62.7	71	47.3
Modern	51	68.0	28	37.3	79	52.7
Total	75	100.0	75	100.0	150	100.0

Source: Field Survey, 2014.

Probit Regression Analysis of the Factors Influencing the participation in Adoption Agricultural Insurance scheme

The Probit regression analysis in table 3 shows that as the household size increases by 1, the chances of the respondents to participate in insurance policy decreases by 2.590 (that is the higher the household size the less likely the farmer participate in insurance scheme). Also, as the farm size increases by 1 the probability of the respondents participating in agricultural insurance scheme increases by 0.021(that is the higher the farm size the higher the likelihood of the farmers to participate in agricultural insurance scheme), as the farming experience of the farmer increases by 1 the probability of the farmer participating in insurance

policy increases by 0.059(that is the higher the farming experience of the farmer the higher the likelihood of the farmer to participate in insurance scheme), In the same vein, as the method of farming of the respondents increases by 1, the probability of the farmer participating in insurance increases by 0.358. As the farmers age increases by 1 the probability of the respondents participating in insurance decreases by 0.3 (that is the higher the age of the farmer the less likelihood the farmer would participate in insurance scheme), and as the level of education of the farmers increases by 1 the probability of the respondents participating in insurance policy increases by 0.436 (that is the higher the level of education of the farmer the higher the likelihood of the farmer to participate in insurance scheme).

Table 3:- Probit Regression Analysis of the factors Influencing the participate in Adoption of Agricultural Insurance scheme.

Variables Config.	Insurance Status	Co-efficient	Standard Error	Z	95%
Age	-0.2590	0.015	-0.220	.826	0.027
Level of Edu	0.436	0.090	4.86	.000	0.611
Household Size	-2.590	0.068	-3.84	.000	-0.127
Farm Size	0.021	0.049	0.42	.672	0.116
Farming Experience	0.059	0.023	2.57	.010	0.103
Method of Farming	0.358	0.252	1.42	.156	0.853
Cons	-0.727	0.566	-1.28	.199	0.383

Source: Field Survey, 2014.

Log-Likelihood = -77.478467

No of observation = 150

Prob> chi2 = 0.0000

Pseudo R² = 0.2548

LR Chi2(6) = 52.99

Research Hypothesis

The hypothesis states that there is no significant difference between the insured farmers and the uninsured farmers according to their response to risk, production practices used on the farm and the farm output.

Data in Table 4 shows that there is a significant difference between the insured respondents and the uninsured respondents according to their response to risk, production practices used on the farm and the farm output. This means that participation in agricultural insurance has impact on the farmer's response to risk, production practices used on the farm and the farm output

Table 4:- Result of hypothesis

Independent Variable	Dependent Variable	T-Value	P-Value	Decision
The insured	The uninsured	3.032	0.005	Significant

: Field Survey, 2014.

Summary, Conclusion and recommendation

Summary
The establishment of the Nigerian Agricultural Insurance Scheme (NAIS) is one of the steps in the process of enhancing increased agricultural productivity. This study was aimed at examining the analysis of agricultural insurance on farming system in Ekiti state. The study rely exclusively on the data collected from 150 respondents (75) insured farmers and (75) uninsured farmers. The result of the study was obtained through the use of descriptive analysis such as frequency and percentage to examine the socio-economic characteristics of the respondents, Probit regression analysis to determine the factors influencing insurance policy and T-test was also used to test the hypothesis of the study.

The socio-economic characteristics of the respondents that were studied include; age (years) , sex, marital status, level of education, household size, farm size (Ha), farming experience (years), method of farming, etc. some of the vital finding made are stated below:

It was discovered that majority of the respondents are male, within the age brackets of 31-50 years,

this shows that the people at this age are energetic and are of their productive stage. Majority of the respondents are married with a household size of less than 6, and they have 10-20 years of experience in farming. It was also discovered that majority of the respondents have a positive attitude towards agricultural insurance.

Conclusion

The study revealed that there is a positive impact of agricultural insurance on the insured farmers in the study area. These groups of farmers have positive attitude towards agricultural insurance as a result of their level of education which makes them more exposed, understanding and enlightened than those who have no formal or low level of education. In addition to the above, their method of farming, farm size, farming experience influences their participation in agricultural insurance.

The respondents age revealed that they are in their working age capacity, hence are expected to be energetic and warm towards participating in Agricultural Insurance programme. Most of the respondents are male. The sexes of the respondents are not evenly distributed. Male

dominated the farming activities in the study area. The insured farmers are more educated than the uninsured farmers and this might be responsible for their awareness of insurance policy in farming activities and its participation.

One of the expectations in production function is that output is positively affected by family labour which is a function of the household size. In the olden days, it is common practice that farmers marry many wives for the purpose of having many children to assist on their farm. The need for hired labour is reduced as most of the farming activities would be easily done by members of the family. However, due to civilization brought about by education, many farmers do not have large family due to high cost of living. The low family size among the insured farmers might be as a result of their higher level of education.

The study shows that most of the respondents engage in small scale farming.

Farming experience of farmers is also an important factor influencing the level of output. It is expected that farmers that have been farming for years have more experience concerning methods of production to adopt, cropping pattern, good crops for intercropping, quantity of input like fertilizer, herbicides, etc. and all these factors positively correlate with the level of output. In essence, the study shows that insured farmers are more experienced in farming and this might be responsible for their more hectares of land cultivated.

The higher number of insured respondents engaging in full time farming may be responsible for their participation in insurance policy than the uninsured farmers.

The Probit regression analysis revealed that increase in household sizes decrease level of participation in agricultural insurance policy while increase in farm land cultivated increases farmers participation in agricultural insurance policy. So also, as the farming experience of the farmer increases, the probability of the farmer participating in insurance policy increases while as the farmers age increases the probability of the respondents participating in insurance decreases and as the level of education of the farmers increases the probability of the respondents participating in insurance policy increases.

Finally, the result of hypothesis shows that there is significant difference between the insured farmers and the uninsured farmers according to their response to risk, production practices used on the farm and the farm output.

Recommendations

- Farmers should be sensitized on the benefits of the insurance policy. Various agricultural insurance schemes, extension services of both states and federal ministries of agriculture must be involved. This should be extended to the local government to allow farmers in the rural areas benefit from the scheme so as to improve the economy of the nation in general. The effect of these will lead to reduction in losses and damages incurred by the farmers thereby encouraging them to invest more funds into farming activities for increased productivity.
- Farmers must be encouraged to participate in insurance policy as this will lead to increased productivity and better farming practices.
- Most farming activities in the study area are small scale in nature. Programmes that will gear up the scale of operation among the farmers should be pursued vigorously to improve production.

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