DETERMINANTS OF CASSAVA FARMERS' KNOWLEDGE AND ATTITUDE TOWARDS CLIMATE SMART AGRICULTURAL PRACTICES IN IMO STATE SOUTHEAST, NIGERIA

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ABSTRACT
This study analysed determinants of cassava farmers' knowledge and attitude towards climate smart agricultural practices in Imo State Southeast, Nigeria. Purposive and multistage random samplssing procedure was adopted in the selection of one hundred and thirty-five (135) cassava farmers. Data for the study were collected using a structured questionnaire and analyzed with descriptive and inferential statistics (multiple regression). Result revealed that mean age of farmers was 52.4 years, mean household size of 8 persons, majority (84.44%) were married with mean farming experience of 19 years, mean farm sizes of 1.0 hectare and a mean annual farm income of ₦184,000. The result indicated that farmers had high knowledge ($\bar{X}$ =2.0) and positive attitude ($\bar{X}$=3.0) of climate smart agricultural practices. Multiple regression result showed that age (β=-3.3705), household size (β=0.5276), farm size (β=0.2959) and farm income (β=0.6106) were determinants of farmers' knowledge of climate smart agricultural practices, whereas age (β=-0.0159), marital status (β=0.1829), education (β=0.0275), farm income (β=0.00275) and farming experience (β=0.0153) also determined farmers' attitude towards climate smart agricultural practices. The study concluded that cassava farmers had high knowledge and positive attitude towards climate smart agricultural practices. The study recommended that inclusion and retention of experienced farmers, provision of up-to-date training in CSA practices and technologies will increase their knowledge and attitude towards climate smart agricultural practices in the study area.

Key words: *determinants, knowledge, attitude, climate, smart, practices, cassava farmers*

INTRODUCTION

Cassava (*Manihot esculenta Crantz*) is the most widely cultivated crop in the southern and Eastern part of Nigeria because it has the ability to grow in marginal lands where cereals and other crops do not grow well. It tolerates drought and can grow in low nutrient soils (International Institute for Tropical Agriculture (IITA) 2020; Food and Agriculture Organization (FAO) 2021). Cassava generates cash income for the largest number of households, comparison with other staples, contributing positively to poverty alleviation (Nwaobiala *et al.* 2019). According to Adeagbo *et al.* (2021) cassava farmers in developing countries require knowledge, attitude and competency upgrade on climate change risks and practice of adaptation initiatives. This is important to help them play their role effectively in the complex and rapidly changing agricultural environment.

Climate-smart agriculture (CSA) is one approach that has been championed as the "holy grail" of agricultural development as a concept which advocates that agriculture is key to climate change adaptation and mitigation (World Bank, 2022). In this study, climate-smart agricultural practices were categorized into smart practices with proven practical techniques that followed the works of Okoro *et al.*, (2020), such practices include; **Tillage Smart Practices (**Zero/minimum tillage, farm fallowing, changes in planting and harvesting dates, use of agrochemicals, liming and organic manure**); Plant Residue Smart Practices** (incorporation of compost, use of crop residue and incorporation of green manure:; **Soil Conservation/Agroforestry:** (contour cropping, afforestation/reforestation, lengthened fallow, mulching, planting of cover crops and alley cropping): **Crop-Based/Agronomy** (mixed cropping, crop rotation, inter cropping, crop diversification, planting of pest and disease, drought resistance and early maturing varieties): **Information Technology** (use of weather forecast, phone use to access weather information and information from agro-meteorological station): **Financial Smart Practices** (farm insurance, leasing of farm assets, diversification to other enterprises and availability of credit).

Despite the availability of these CSA practices in the study area, it seems that there is paucity of information on farmers' knowledge and attitude which necessitated the researchers to undertake this study. The study was undertaken to analyse determinants of cassava farmers' knowledge and attitude towards climate smart agricultural practices in Imo State Southeast, Nigeria.

SPECIFIC OBJECTIVES WERE TO;

i. describe socioeconomic characteristics of cassava farmers;

ii. ascertain knowledge of cassava farmers about climate smart agriculture practices; and

iii. ascertain attitude of cassava farmers on climate smart agriculture practices;

HYPOTHESES OF THE STUDY

HO_1: Socioeconomic characteristics of cassava farmers do not influence their knowledge towards climate -smart agricultural practices in the study area.

HO_2: Socioeconomic characteristics of cassava farmers do not influence their attitude towards climate -smart agricultural practices in the study area

METHODOLOGY

Study Area and Description

The study was carried out in Imo State Southeast, Nigeria. The State lies within Latitudes 4o 45'N and 7º 15'N of the equator and Longitude 6º 50'E and 7º 25'E of the Greenwich Meridaian. It occupies the area between the lower River Niger and the upper and middle Imo River. The State is bounded on the east by Abia State, on the west by River Niger and Delta State; and on the north by Anambra State, while Rivers State lies to the south. The State is located within the rainforest belt of Nigeria, and the temperature ranges between 20º C and 30o C. Agriculture is the major occupation of the people. The State has a projected population of 3,934,899 persons (National Population Commission (NPC) 2017). The major crops produced include cassava, yam, cocoyam, maize, and melon. Imo state is made up of twenty seven (27} Local Government Areas (LGAs) and three Agricultural zones of Okigwe, Owerri and Orlu. The population for this study comprised of all cassava farmers in rural communities of Imo State.

Sampling Procedure and Sample Size

Purposive and multistage random sampling procedures were used in the study. Purposively Agricultural Development Programme (ADP) contact farmers who were involved in cassava cultivation were chosen for the study. First, the three agricultural zones that make up Imo state namely; Owerri, Orlu and Okigwe were selected. First, three (3) blocks each were randomly selected from the three agricultural zones to give a total of nine (9) blocks (**Owerri** – Owerri North, Ahiazu Mbaise and Owerri South blocks: **Orlu**–Orlu, Nwangele and Nkwerre blocks and **Okigwe** – Obowo, Ihite Uboma and Isiala Mbano blocks). Also, three (3) circles each were randomly selected from the selected blocks which to give a total of twenty-seven (27) circles. Finally, five (5) cassava farmers each were randomly selected from each of the selected circles to give a sample size of one hundred and thirty five (135) cassava farmers. Data for the study were analyzed using descriptive statistics (frequency counts, percentages and mean scores) and inferential statistics (multiple regression analysis

Measurement of variables

(i) In order to assess the knowledge of farmers, six (6) climate smart agricultural practices were provided with three response options of; "excellent", "good" and "poor" with scores of 3, 2 and 1. A midpoint was obtained thus; 3+2+1 = 6/3 = 2.0. The following decision rules were used; Mean scores between; below 1.00 = No knowledge, 1.00-1.50= low knowledge, 1.51-2.00 = moderate knowledge and above 2.0 = high knowledge

(ii) The attitude of cassava farmers were measured by providing them with fourteen (14) attitudinal statements with the response options of; strongly agree, agree, disagree and strongly disagree with scores of 4, 3, 2 and 1 assigned, respectively. A midpoint was obtained thus; 4+3+2+1 =10/4 =2.50. Mean score greater than or equal to 2.50 implied positive and otherwise, negative attitude towards climate smart agricultural practices.

Model Specification

The hypotheses for the study were tested with multiple regression analysis at 95% confidence level. The four functional forms of regression model: Linear, Semi-log, Exponential and Cobb-Douglas were tried. The best fit was chosen as the lead equation based on its conformity with econometric and statistical criteria such as the magnitude of R^2, F-ratio and number of significant variables.

The four functional forms are expressed thus:

Where,

i. Linear Function: $Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + ei$......................... (1)

ii. Semi-log Function: $Y = L_n\beta_o + \beta_1 L_n X_1 + \beta_2 L_n X_2 + \beta_3 L_n X_3 + \beta_4 L_n X_4 + \beta_5 L_n X_5 + \beta_6 L_n X_6 + \beta_7 L_n X_7 + \beta_8 L_n X_8 + \beta_9 L_n X_9 + \beta_{10} L_n X_{10} + \beta_{11} L_n X_{11} + ei$.........................(2)

iii. Exponential Function: $L_n Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + ei.$ .... (3)

iv. Cobb-Douglas Function: $L_n Y = L_n\beta_o + \beta_1 L_n X_1 + \beta_2 L_n X_2 + \beta_3 L_n X_3 + \beta_4 L_n X_4 + \beta_5 L_n X_5 + \beta_6 L_n X_6 + \beta_7 L_n X_7 + \beta_8 L_n X_8 + \beta_9 L_n X_9 + \beta_{10} L_n X_{10} + \beta_{11} L_n X_{11} + ei$.................. (4)

Y = Knowledge and Attitude of cassava farmers were measured by mean scores

β_1 = age (number of years)

β_2= marital status (married =1, otherwise =0)

β_3= household size (number of persons)

β_5= educational background (years of schooling)

β_6= farm size (hectares)

β_7 = farm income (₦)

β_8= non-farm income (₦)

β_9= farming experience (years)

β_{10}= extension contact (number of times)

β_{11}= cooperative membership (years)

e_i= error term

RESULTS AND DISCUSSION

Selected Socioeconomic Characteristics of Cassava Farmers

Selected socio-economic characteristics of cassava farmers are shown in Table 1. The result showed that mean age of farmers was 52.4 years. The result implied that the respondents were capable of undertaking activities involved in combatting effect of climate change in cassava farming activities. The result is in agreement with Okon *et al*. (2021), Okoro *et al*. (2022) as they affirmed that farmers' ages help in selecting and application of the best climate smart agricultural practices available to them. The mean household size of farmers was 8 persons. The result suggest that farmers had access to labour since farmers' number of persons in a household assist in in providing labor for farming activities which has a resultant effect on wages. The result also shows that majority (84.44%) were married, which suggests that married people dominated cassava farming in the study area. The result corroborates with Ifeanyi-Obi and Henri-Ukoha, (2022) as they obtained a similar result among arable crop farmers in Rivers State, south-south Nigeria. The mean farming experience of farmers was 19 years. Number of years a farmer spent in the farming business result to practical knowledge he has acquired on how he could overcome effect of climate change on arable crop production as reported by Oti *et al*. (2021). However, the mean farm sizes of cassava farmers were 1.0 hectares which infer that they had small farm holdings for cassava production. This result agrees with the findings of Arifin and Nirawal, (2018) as they reported that majority of farmers in south-east Nigeria are small scale farmers, on the average cultivate less than 2.0 hectares of land. The mean annual farm income realized from cassava farming was ₦184,000 which translates to ₦15,333.00 per month. Incomes realized from farming activities enhance farmers' ability to seek for the best climate smart initiative that will curb the hazardous effect of climate on arable crops.

Table 1: Selected socio-economic characteristics of respondents in the study area (n = 135)

Variables	Indices
Age (years)	52.4
Household size (numbers)	8
Marital status	88.44
Secondary education (years)	49.63
Farming experience (years)	19
Farm size (hectares)	1.0
Annual farm income (naira)	184,000

Source: *Field Survey, 2023*

Knowledge of Cassava Farmers about Climate Smart Agricultural Practices

The result indicate that plant residue ($\bar{x}$ = 2.6), tillage and crop based with mean scores of 2.3 each were the climate smart agricultural practices (CSA) that recorded high knowledge as affirmed by cassava farmers. However, the farmers had moderate knowledge of soil conservation/agroforestry ($\bar{x}$ = 1.9) (contour cropping, lengthened fallow, use of mulching and planting of cover crops). Furthermore, information technology also had moderate knowledge ($\bar{x}$ = 1.9) as against financial practices ($\bar{x}$ = 1.5). The total grand mean score of 2.0 indicating that cassava farmers had high knowledge of CSA practices in the study area. This result corroborates with Chukwuemeka and Agoh, (2022) Onyemauwa *et al*. (2022), Horamo *et al*. (2021) in their study reported that farmers' awareness and knowledge of Climate Smart Agricultural practices enhance adaptation and mitigation of climate change effects on arable crops such as cassava.

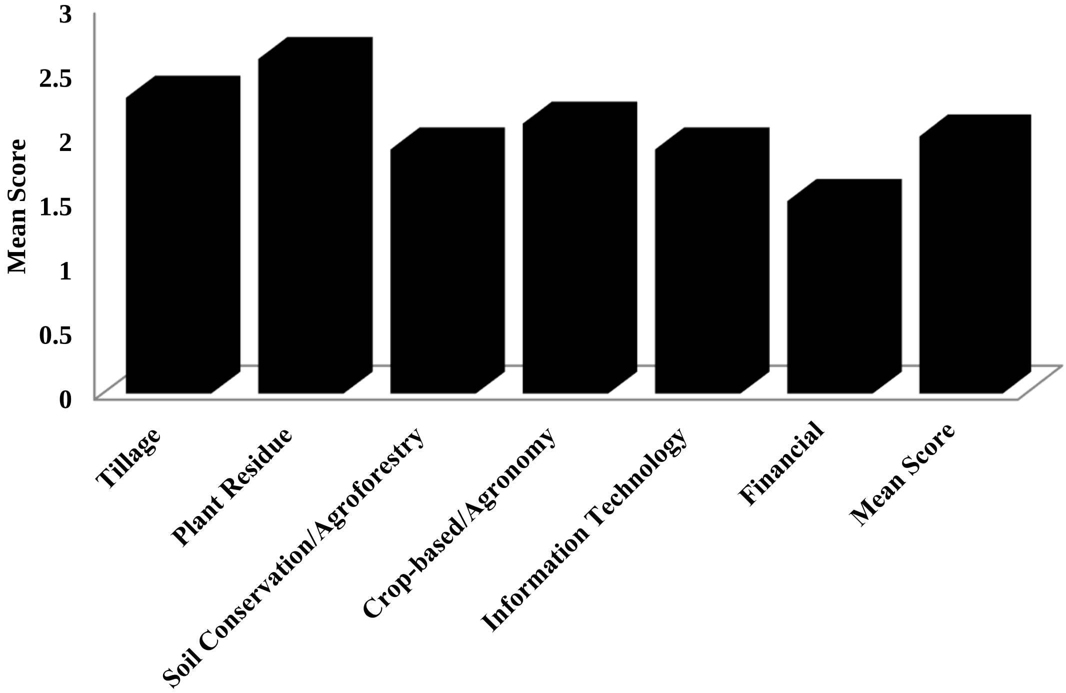

Figure 1. Farmers' Knowledge of Climate Smart Agricultural Practices

Attitude of Cassava Farmers towards Climate Smart Agricultural Practices

The result in Table 2 shows the mean frequency distribution of attitude of cassava farmers towards climate smart agricultural practices (CSAP). The result indicated that farmers affirmed that some CSA practices were costly to practice ($\overline{x}$ = 3.6), CSA adapted measures has short term effect on climate change variability on cassava production ($\overline{x}$ = 3.2), CSA practices do not address issues of disease and pest infestation on cassava ($\overline{x}$ = 3.5) and extension personnel do not promote CSA practices ($\overline{x}$ = 3.1). More so, they averred that some CSA are costly to practice, has not addressed the issue of sustainable increase in agricultural production and income and are environmentally friendly with mean ratings of 3.1. Farmers agreed that CSA materials when applied in the field guarantee good cassava yield and is the best strategy to acclimatizing and building resilience to climate alteration and CSA initiatives promotes reduction or eliminating greenhouse gas (GHG) emission ($\overline{x}$=2..9). The farmers also agreed that CSA practices enhances food security ($\overline{x}$=2.7) and promotes the transformation of agricultural systems ($\overline{x}$ = 2.4). The result indicated that cassava farmers had positive attitude ($\overline{x}$ = 3.0) to the practice of climate smart agricultural practice in the study area. The result corroborates with the findings of Obi-Egbedi *et al*. (2022), Ogunjinmi and Ogunjinmi, (2022), Jellason *et al*. (2019), Chukwuemeka*et al*., (2018) as they reported that Climate Smart Agricultural initiatives promotes livelihood diversification, reduces the effect of climate variability on arable crops and enhances food security of farmers.

Table 2: Distribution of cassava farmers' attitude towards climate smart agricultural practices

Attitudinal Statements	SA	A	D	SD	Total	Mean	Decision
Some Climate Smart Agriculture (CSA) strategies are costly to practice	102(408)	14(51)	10(20)	9(9)	488	**3.6**	**Positive**
CSA adapted measures has short term effect on climate change variability on cassava production	60(240)	57(171)	9(18)	9(9)	438	**3.2**	**Positive**
Improved cassava cuttings which is a major adaptation material is not readily available	55(220)	55(165)	76(32)	499)	410	**3.0**	**Positive**
Extension personnel do not promote CSA	47(188)	62(186)	14(28)	12(12)	414	**3.1**	**Positive**
Some of CSA practices are complex to practice	47(188)	53(159)	22(44)	13(13)	404	**2.9**	**Positive**
CSA practices do not address issues of disease and pest infestation on cassava	52(208)	53(159)	21(42)	9(9)	418	**3.1**	**Positive**
CSA materials when applied in the field guarantee good cassava yield	32(128)	51(153)	43(86)	9(9)	376	**2.8**	**Positive**
CSA has not addressed the issue of sustainable increase in agricultural production and income,	25(100)	54(162)	35(70)	21(21)	353	**2.6**	**Positive**
CSA is the best strategy to acclimatizing and building resilience to climate alteration	43(172)	56(168)	21(42)	15(15)	397	**2.9**	**Positive**
CSA practices promote reduction or eliminating greenhouse gas (GHG) emission	39(156)	57(171)	28(56)	11(11)	394	**2.9**	**Positive**
CSA practices are environmentally friendly	47(188)	65(195)	19(38)	4(4)	425	**3.1**	**Positive**
CSA practices enhances food security	39(156)	45(135)	26(52)	25(25)	368	**2.7**	**Positive**
CSA promotes the transformation of agricultural systems	28(112)	28(84)	51(102)	28(28)	326	**2.4**	**Positive**
Total Mean ($\bar{x}$)						**39**	**Positive**
Grand Mean ($\bar{x}$)						**3.0**	**Positive**

Source: *Field Survey, 2023*
Values in parentheses are nominal Likert values multiplied by frequencies

Socioeconomic Characteristics of Cassava Farmers do not Influence their Knowledge of Climate Smart Agricultural Practices

The result in Table 3 showed the regression estimates of socio-economic factors influencing farmers' knowledge on climate smart agricultural practices in the study area. Among the four functional forms estimated, the semi-log function was chosen as the lead equation based on a high R^2 value, number of significant factors and agreement with a priori expectations. The F-value was highly significant at 1.0% level, indicating a regression of best fit. The R^2 value of 0.5154 showed that 51.54% of the variability in knowledge on climate smart agricultural practices was explained by the independent variables.

The coefficient for age (-3.3705) was negatively related with the farmer's knowledge on climate smart agricultural practices and significant at 5.0% level of probability. This implied that increase in age of the farmers in the system will probably decrease the farmer's knowledge on climate smart agricultural practices in the study area. The aforementioned study explained that old age has a negative correlation with physical strength; as a result, they are expected to rely more on the old ways of farming. Similar to works of Subedi *et al*. (2019), Reppin *et al*. (2020) opined that the age of farmers negatively affects the likelihood of them actively engaging in different CSA strategies.

The coefficient for household size (0.5276) was also positive and significant at 10% level of probability indicating that any increase in household size will increase the farmer's knowledge on climate smart agricultural practices in the study area. This result corroborates with Reppin *et a*l. (2020) found in their study that large households have the advantage of more access to free household labour for farm activities than those with small household sizes and thus suggest how to mitigate and adapt to climatic change situation.

The coefficient for farm size (0.2959) was highly significant at 1.0% level of probability and positively related with farmer's knowledge on climate smart agricultural practices in the study area. This indicated that any increase in farm size will increase in the same proportion of farmer's knowledge on climate smart agricultural practices. This result is in consonance with Chukwuemeka and Agoh, (2022), Eze, (2022) as they reported that small farm holding serve as basis for farmers to learn and practice available climate smart agricultural strategies to them.

Finally, coefficient for farm income (0.6106) was positive and significant at 10.0% level of probability, indicating that increase in farm income will increase the farmer's knowledge on climate smart agricultural practices in the study area. The significance of annual income by the farmers also may be informed that the provision of the family needs. In contradiction to the findings, Mwinkom *et al*. (2021) were of opinion that higher farm income could support the ability of a farmer to improve their knowledge, experience and acquire bigger farm sizes, thus geared towards climate smart agricultural practices. Rao *et al*. (2019) also revealed that higher household income can enable the accessibility to relaxed liquidity constraints and improving the adoption of technology.

Table 3: Regression estimates of socio-economic factors influencing farmers' knowledge on climate smart agricultural practices in the study area

Variables	Linear	Exponential	Double Log	Semi-Log+
Constant (β_0)	16.8548 (6.47)***	2.8109(13.53)***	3.0412 (3.51)**	19.064 (1.76)*
Age (β_1)	-0.0632 (-1.78)*	-0.0047 (-2.55)**	-0.2447 (-3.64)	-3.3705(2.96)**
Marital status (β_2)	0.6316 (2.05)*	0.0508 (2.08)*	0.0345 (0.54)	0.4065 (0.51)
Household size (β_3)	0.0978 (2.41)*	0.0072 (1.79)*	0.0375 (3.12)**	0.5276 (2.12)*
Education (β_4)	0.0071(0.11)	0.0022 (0.41)	0.0143 (0.26)	-0.0546 (-0.08)
Occupation (β_5)	0.1691 (0.30)	0.0115 (0.26)	0.0039 (0.09)	0.0369 (0.07)
Farm size (β_6)	-0.6967 (-2.48)*	-0.0392 (-0.76)	0.0819 (4.10)***	-0.2952 (4.32)***
Farm income(β_7)	-3.86e-07 (-0.11)	-1.01e-07 (-0.35)	0.0309 (0.57)	0.6106 (1.99)*
Non -farm income (β_8)	2.41e-06 (0.21)	-2.52e-07 (0.28)	0.0150 (0.35)	0.1422 (0.27)
Farming experience (β_9)	-0.0524 (-0.14)	-0.0031 (-0.11)	-0.0081 (-0.28)	-0.1235 (-0.35)
Extension contact (β_{10})	-0.1087 (-0.39)	-0.0088 (-0.40)	-0.0077 (-0.35)	-0.1068 (-0.39)
Membership of cooperative (β_{11})	-0.0021 (-0.09)	-0.0003 (-0.15)	0.0035 (0.19)	0.0743 (0.33)
F-calculated	5.93	5.82	5.84	6.04
R-squared	0.4793	0.4347	0.4583	0.5154
Adjusted R-squared	0.4410	0.4082	0.4139	0.5003

Source: *STATA Result, 2023*

* $p \leq 0.10$, ** $p \leq 0.05$ and *** $p \leq 0.01$
+ = lead equation

Socioeconomic Characteristics of Cassava Farmers do not Influence their Attitude towards Climate Smart Agricultural Practices

The regression estimates of socio-economic factors influencing farmer's attitude on climate smart agricultural practices in the study area was presented in Table 4. The study showed that among the four functional forms estimated, the exponential function was chosen as the lead equation based on a high R^2 value, number of significant factors and agreement with a priori expectations. The F-value was highly significant at 1.0% level indicating a regression of best fit. The R^2 value of 0.5820 showed that 58.20% of the variability in attitude on climate SMART agricultural practices was explained by the independent variables.

The coefficient for age (-0.0159) was negative and highly significant at 1.0% level of probability; indicating that the younger farmers will probably have positive attitude towards climate smart agricultural practices in the study area. The age of a farmer informs his/her exposure to varying farming experiences, systems, and seasons. Thus Reppin *et al*. (2020) noted that the age of a farmer will positively impact his/her perception and attitude of climate change. Onyemauwa *et al*. (2022) Issahaku and Abdul-Rahaman, (2019) found that age was hypothesized to have both negative and positive influences on the selection of CSA practices. In contradiction with the findings, Danso-Abbeam *et al*. (2021) found age of the respondent significant and negatively signed with the use of CSA practices; suggesting younger farmers were more likely to diversify to climatic change strategies measures.

The coefficient for marital status (0.1829) was positive and significantly related with farmers' attitude towards climate smart agricultural practices in the study area at 10.0% level of probability. This implied that increase in married respondents will increase positive attitude towards climate smart agricultural practices in the study area. This is expected and in accordance with a priori expectations as the attitude of farmers will be a determinant of their spouse approval. In corroboration with the study, a study of Sudanese men's attitudes, knowledge and practice concerning CSA practices suggested that men made the decision about it as reported by Ifeanyi-Obi and Ugorji, (2020), Ibrahim *et al*. (2020).

The coefficient for education (0.0275) was highly significant at 1.0% level of probability and positively related with farmer's attitude towards climate smart agricultural practices in the study area. This implied that increase in level of education among farmers will increase their attitude towards climate smart agricultural practices in the study area. This is not surprising as education is a powerful human capital that makes people aware and positive attitude of the series of opportunities for CSA practices. This finding is in line with the result of a similar study in Northern Ghana by Issahaku and Abdul-Rahaman, (2019), Asravor *et al*. (2018). More so, Izuogu *et al*. (2021) study found that education coefficient was positive and has a significant influence on the likelihood of enhancing the attitude and facilitating adopting of more climate change adaptation strategies.

The coefficients for farm income (0.00275) and farming experience (0.0153) were positive and significant at 10.0% level of probability each. This indicated that any increase in farm income and years of farming experience will lead to an increase in attitude of farmer's towards climate smart agricultural practices in the study area positively. This is informed that the farmers' rely on the knowledge and attitude to adopt CSA practices. Nevertheless, the study showed that farmers with more years of arable farming experience will adopt CSA practices. This may not be expected as experienced farmers might have known and were aware of ways to adapt to the coping effect and situation of climatic change. The possible explanation to the finding was that the experienced farmers had already known the adverse effect climate change on cassava production as reported by Sova, (2018), Subed *et al*. (2019).

Table 4: Regression estimates of socio-economic factors influencing farmers attitude towards climate smart agricultural practices in the study area

Variables	Linear	Exponential +	Double Log	Semi-Log
Constant (β_0)	379.6642 (0.80)	3.8993(6.37)***	6.5490(2.21)*	2850.9720(2.84)**
Age (β_1)	-15.6387(3.59)**	-0.0159(3.96)***	-0.9009(-3.93)***	-887.1397(-2.30)*
Marital status (β_2)	182.9103(1.80)*	0.1829(3.24)**	0.1104(0.50)	128.8023(3.34)**
Household size (β_3)	12.0715(0.57)	0.0079(0.29)	-0.0025(-0.10)	1.002839(0.05)
Education (β_4)	20.7342(4.42)***	0.0275(3.82)***	0.2312(2.20)*	180.9560(3.01)**
Occupation (β_5)	42.1722(0.36)	0.01872(0.13)	0.0009(0.01)	13.3554(0.11)
Farm size (β_6)	30.2817(0.23)	0.1584(0.92)	-0.0454(-0.25)	-108.8567(-0.77)
Farm income(β_7)	-0.0003(-0.46)	3.69e-06(1.76)*	0.0441(0.24)	99.7726(0.70)
Non -farm income (β_8)	-0.0037(-3.33)**	-1.06e-06(-1.10)	-0.0745(-3.19)**	-107.0492(-0.97)
Farming experience (β_9)	11.0269(1.83)*	0.0153(1.98)*	0.1223(2.96)**	80.4906(1.92)*
Extension contact (β_{10})	5.1113(0.09)	0.0146(0.20)	0.0140(0.19)	2.0181(0.04)
Membership of cooperative (β_{11})	-2.9292(-0.58)	0.0147(0.11)	0.0523(0.83)	5.1639(0.11)
F-calculated	5.91	7.95	4.79	4.84
R-squared	0.5475	0.5820	0.5214	0.5374
Adjusted R-squared	0.5131	0.5578	0.5579	0.5109

Source: *STATA Result, 2023*
* p≤ 0.10, ** p≤ 0.05 and ***p≤ 0.01
+ = lead equation

Conclusion and Recommendations

The study concluded that cassava farmers had high knowledge and positive attitude towards climate smart agricultural practices. Coefficients for age, farm size, household size, farm income influenced farmers' knowledge on climate smart agricultural practices whereas age, marital status, farm income and farming experience influenced farmers' attitude towards climate smart agricultural practices in the study area.

The study recommended that there is need to increase farmer's knowledge and attitude on climate smart agricultural practices through attraction, inclusion and retention of experienced farmers who are agile, strong and ready to invest in cassava production. Also government investment in rural public education will provide farmers with up-to-date training in CSA practices and technologies.

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