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SOCIO-ECONOMIC DETERMINANTS OF CASSAVA FARMERS' PARTICIPATION IN USAID/MARKETS II PROGRAMME IN AKWA IBOM STATE, NIGERIA

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ABSTRACT
This study analyzed socio-economic determinants of cassava farmers' participation in USAID/MARKET II programme in Akwa Ibom State, Nigeria. Multi-stage random sampling procedure was used to select 90 USAID farmers. Data were collected with a structured questionnaire and analyzed using descriptive statistics and inferential statistics (Tobit regression analysis). The result indicated that USAID farmers had high participation ($\overline{X}$ = 2.6) in the stages of proramme development. Result showed that mean ages of USAID farmers was 40.5 years, a good proportion (58.9%) acquired secondary education, mean years of farming experience of 8 years, mean farm sizes of 1.8 hectares, mean annual cassava income of ₦233, 855.6 mean credit of ₦116, *667*.00 and mean cooperative experience of 3.4 years. Tobit regression results showed that coefficients for age (β = 0.0579), education (β = 0.75980), farming experience (β = 0.0743), farm size (β = -0.6078), farm income (β = 0.2784), amount of credit (β = 0.5929), membership of cooperative societies (0.5745) and farm output (β = 0.2643) were determinants of farmers' participation in the stages of programme development. The study therefore recommends integration of farmers in the design of any agricultural intervention programme that support income diversification of farmers, group formation access to education, credit and land to increase farm output for effective participation in the stages programme development.

Keywords: Socio-economic, Factors, USAID/MARKETS, Cassava farmers, Participation.

INTRODUCTION
Most of the developing countries in Africa face severe poverty and hunger, as it reflects uncertain access to enough and appropriate food. Even in the continent, sub-Saharan African countries had highest prevalence in hunger, malnutrition, food insecurity and famine due to subsistence nature of agriculture, economic and political instability, and high population growth rate among others (Fadipe *et al.,* 2019). Over the years, various agricultural programmes and policies that are both public and private sector driven has been developed, which focused more on improving the socio-economic status and welfare of participating farmers (Nwaobiala and Ubeh, 2019a). According to Hoe *et al.* (2017) participation is the active engagement of the minds, hearts and energy of people in the process of their own healing and development and thus becomes infused with community empowerment rather than with community need and concession.

Akerele *et al.* (2013) opined that participation is expected to lead to better designed projects, better targeted groups or beneficiaries, more cost-effective and timely delivery of project inputs, more equitably distributed project benefits with less corruption and other rent-seeking activity. Community participation, wherein beneficiaries are involved in critical stages of the development interventions is increasingly gaining attention in global development discourse. It enables the intended beneficiaries to partake in key decision-making for the project and gives opportunity for local people to have control of the project (Yusuf *et al.*, 2020). Farmers' participation in agricultural development programmes has been proposed as a method to achieve a variety of goals, including ensuring food security, poverty reduction, improving service delivery, expanding livelihood opportunities and strengthening demand for good governance (Yusuf *et al.*, 2020).

In Nigeria, foreign agencies and international organizations like the World Bank, International Fund for Agricultural Development (IFAD), United States Agency for International Development (USAID), International Institute of Tropical Agriculture (IITA) among others, in collaboration with the Federal and State Governments of Nigeria have played a remarkable role of developing agricultural technologies, through the various research institutes in the country. This resulted to remarkable increase in the production of various commodities such as cassava that had positive impact on the food security and livelihoods of rural farmers in the country (Abubakar *et al.*, 2018).

As part of the effort to address this food gap, The Maximizing Agricultural Revenue and Key Enterprise in Targeted Sites (MARKETS II) USAID/Nigeria's flagship project under their Feed the Future (FTF) Agricultural Transformation Programme (ATP), which is a successor to the previous seven years of the MARKETS was established to bridge this food gap. The programme aims to sustainably improve the performance, incomes, nutrition and food security of Nigerian poor rural farmers or smallholders in an environmentally appropriate manner through proven private sector demand-driven market interventions (USAID, 2017; Nwaobiala *et al.*, 2022).

Though the introduction of this programme in the beneficiary States was received with skepticism among Nigerians considering all that led to the failure of past agricultural development policies. Based on the stated goals of the programme, it was found that many studies focused on impact studies, poverty reduction and food security neglecting farmers' socio-economic factors as it influences their participation in the stages of programme development in the study area. It is against this background that this study sought to analyze socio-economic factors influencing cassava farmers' participation in USAID/MARKETS II programme in Akwa Ibom State, Nigeria

The specific objectives were to:

i. describe socio-economic characteristics of participating farmers;
ii. ascertain extent of farmers' participation in the stages of programme development; and
iii. examine constraints faced by participating farmers in the programme.

Hypothesis of the study H_{O1}: There is no significant relationship between selected socio-economic characteristics of farmers and their extent of participation in the stages of programme development

MATERIALS AND METHODS

The Study Area

The study was carried out in Akwa-Ibom State Nigeria. The State is strategically located in the coastal southeastern part of Nigeria in the territorial expansion between Latitude $4^0$33N and $5^0$35N and Longitude $7^0$35E and $8^0$25E. Akwa Ibom State occupies a total landmass

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of 7,246 square kilometers, with a population of 5,482,200 people (NPC, 2016) and 3.5% annual population growth rate of 191,877 people. Akwa Ibom State has three senatorial districts namely; Uyo, Eket and Ikot Ekpene and 31 Local Government Areas and has six agricultural zones (Uyo, Ikot Ekpene, Etinan, Eket and Oron). The State is located in the south-south geopolitical zone, and is bordered on the east by Cross Rivers State, on the west by Rivers State and Abia State, on the south by the Atlantic Ocean and southernmost top of Cross State.

Sampling Procedure and Data Analysis

Purposive sampling technique was adopted to randomly select one Local Government Area (programme area) each from the agricultural zones that make up the State namely; Uyo, Eket, Oron, Ikot Ekpene, Etinan and Abak. The choice of these Local Government Areas (programme areas) was due to the intensity of the programme activities in these areas. Multistage random sampling procedure was used in the selection of participating communities, farmer groups and participating farmers. First, two communities each were randomly selected from the six Local Government Areas: **Uyo** – (Effat Offot and Aka Offot); **Eket** – (Afaha Eket and Okon Eket); **Oron** – (Eyo Abasi District (Akaibom) and Uya Oro District (Eyo Isu); **Ikot Ekpene** – (Ikot Abia Idem and –Ikot Osura; **Etinan** – (Ekpene Obom and Ikot Ekan) and **Abak** - (Utu Edem Urua and Oku Abak), giving a total of 12 participating communities. Furthermore, from the selected participating communities, two farmer groups each were randomly selected which gave a total of 24 farmer groups. Finally, four participating farmers each were randomly selected from the selected farmer groups and this gave a sample size of 96 participating cassava farmers in the programme. The objectives were realized with descriptive statistics such as frequency counts, mean scores and percentages, while the hypothesis was tested using Tobit regression analysis.

Measurement of Variables

a. Extent of participation of farmers in the stages of programme development were measured using the support services disseminated to the respondents and rated on a 3 - point rating scale of always =3, rarely =2 and never =1. A midpoint was obtained thus; 3+2+1 = 6/3 =2.0. Mean scores between 1.0 -1.49 = low extent, 1.50 -1.99 = moderate extent and above 2.0 = high extent.
b. Constraints faced by farmers participating in the programme. This was measured and rated on a 3- point likert type scale of; Severe = 3, mild = 2 and not severe =1. A midpoint was obtained thus; 3+2+1 = 6/3 =2.0. Mean scores between 1.0 -1.49 = low constraint, 1.50 - 1.99 = moderate constraint; 2.0 and above = high constraint**.**

Model Specification

Socio-economic determinants of farmers' participation in the programme were tested using Tobit regression model. Since the extent of participation of cassava farmers in USAID MARKET II stages of programme development cannot be negative (the threshold is zero), the dependent variables can be written using an index function approach. The empirical model are presented as:

$I^{x}_{i} = B^{T} X + ei$ …(1)

$Yi = O \text{ if } Ii^{*} = T$ …(2)

$Yi = I \text{ if } 1^{*} > T$ …(3)

where;

Y = limited dependent variable, which simultaneously measures the intensity and extent of participation in the stages of programme development.

I = an underlying latent variable that indexes participation.

T = observed threshold level.

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X = vector of parameter to be estimated error term. If the non-variables T becomes a continuous function of the independent variables and 0 otherwise.

For the generalized case, the value of the log likelihood from participation is given as the variables used in the analysis. The explicit form of the function is specified as:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \mu_i$$

where;

β_o = constant
$\beta_1 - \beta_{12}$ = Regression Coefficient
Y = Extent farmers' participation in stages of programme development (mean scores)
β_1 = gender (male = 1, female = 0)
β_2 = age (years)
β_3 = marital status (married = 1, otherwise = 0)
β_4 = household size (number of persons)
β_5 = level of education (years of schooling)
β_6 = farm size (hectares)
β_7 = farming experience (years of farming)
β_8 = amount of credit received (naira)
β_9 = occupation (farming yes= 1, otherwise = 0)
β_{10} = annual farm income (naira)
β_{11} = farm output (Kg)
β_{12} = membership of social organizations (years)
μ_i = error term.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

The distribution of the respondents according to their socioeconomic characteristics is presented in Table 1. The distribution of respondents according to gender is shown in Table 1. The mean ages of USAID farmers were 40.5 years. The result suggests that the farmers groups were young, active and capable of undertaking activities involved in cassava farming. The result is in consistent with the finding of Alfred *et al.* (2019), as they affirmed that farmers within active age group have more innovative ability as well as agricultural production efficiency for household food security. The result also showed that a good proportion (58.9%) of USAID farmers had secondary education. This result suggests that both farmers group were literate. Education is vital because it helps one to have good understanding of communication skills (Owolade *et al.*, 2019). The mean years of farming experience of USAID and non-USAID farmers was 8 years. Number of years a farmer spent in the farming business enhances the participation and adoption of improved farming techniques, thereby increasing output of farmers (Nwaobiala and Ubeh, 2019b). However, result indicate that a moderate proportion (45.6%) of USAID and 35.6% (non-USAID) farmers were full time farmers. Nwaobiala (2018) in his study found that cassava farming is being practiced by majority of farmers in the southern part of the country. The mean farm sizes of both group of farmers were 1.8 hectares. This result suggests that the farmers were small scale farmers. This result agrees with the findings of Fadipe *et al.* (2019) who reported that majority of farmers in south east Nigeria are small scale farmers, on the average cultivate less than 2.0 hectares of land.

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Table 1: Selected socio-economic characteristics of respondents in the study area

Variables	Frequency ((n = 90)	Percentage
Age (years)		
20 – 40	50	55.6
41 – 60	40	44.4
Mean ($\bar{X}$)		**40.5**
Education (years)		
No formal Education	1	1.1
Primary Education	5	5.6
Secondary Education	53	58.9
Tertiary Education	31	34.4
Farming experience (years)		
2 – 6	40	44.5
7 – 11	41	45.5
12 – 16	9	10.0
Mean ($\bar{X}$)		**8**
Amount of credit (₦)		**1.5**
20,000 – 70, 000	7	7.8
71,000 – 120, 000	36	40.0
121, 000 – 170, 000	28	42.2
171,000 – 220,000	5	5.6
121.000 – 270,000	4	4.4
Mean ($\bar{X}$)		**116,667.00**
Farm size (hectares)		
0.5 – 1.0	19	21.1
1.1 – 1.5	12	13.4
1.6 – 2.0	39	43.3
2.1 – 2.5	20	22.2
Mean ($\bar{X}$)		**1.8**
0utput (Kg/ha)		
5,000 – 25,000	8	8.9
26,000 – 45,000	27	30.00
46,000 – 65,000	20	22.32
66,000 – 100,000	35	38.9
Mean ($\bar{X}$)		**58,405.56**
50,000 – 200,000	13	14.44
201,000 – 215,000	43	47.76
216,000 – 230,000	27	30.00
231,000 – 245,000	7	7.8
Mean ($\bar{X}$)		**₦ 233,855.6**
Cooperative membership (years)		
2 – 4	22	24.5
5 – 8	24	26.7
9– 10	8	8.8
None	36	40.0
Mean ($\bar{X}$)		**3.4**

Source: Field Survey, 2020

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Table 1 also shows that the mean outputs for both groups of farmers were 58,405.56 kg/ha (USAID farmers) and 34,038.89 kg/ha (non-USAID farmers). This result implies that the USAID farmers had more output than the non-USAID farmers. Abdullahi *et al.* (2018) affirmed that participation of farmers in donor agencies sponsored programmes has been proven to increase farm output due to yielding enhancing technologies disseminated to beneficiaries. The mean cassava income of USAID farmers was ₦233, 855.6 as against ₦192, 986.7 (non-USAID farmers). This result implies that the USAID farmers had more income from cassava roots than the non-USAID farmers. The result corroborates with the findings of Opalauwa *et al.* (2019) as they reported that income from sales of any farm produce is a determinant of the total output of any crop produced. The mean credit received by both farmer groups were ₦116, 667.00 (USAIID farmers) and ₦45, 056.00 (non-USAID farmers). Adebayo *et al.* (2019) opined that farm credit is among the essential factors needed for agricultural production, and with it, farmers can secure farm inputs such as; farm equipment and hired labour. The result shows that USAID farmers had 3.4 years of cooperative as against their non-USAID farmers (2.2 years). The result implied that the USAID farmers had more years of cooperative experience than their counterparts. Olatinwo *et al.* (2019) asserted that farmers' cooperatives enhance advantages of economics of scale, overcoming barrier to assets, managing available resources better and access to information delivery on agricultural production.

Farmers' Participation in Stages of USAID/MARKET II Programme Development

The mean frequency distribution of respondents according to farmers' participation in stages of programme development is shown in Figure 1. The result indicates that USAID farmers had high participation in all the stages of programme development. The farmers were part of decision making of the programmme with high participation score of 2.7, project execution and implementation and project evaluation with mean ratings of 2.6 each, as against project planning and monitoring that had high participation scores 2.5 each. The USAD farmers had high participation ($\bar{X}$=2.6) in the stages of programme development. Involvement of farmers or beneficiaries in stages of development programmes assures credibility and flexibility in project decisions that are aimed to achieve project goals and objectives that will be beneficial to them (Umeh, 2018). Tokula (2019) reported that beneficiary participation in projects is characterized by top-down approach to decision making during the planning phase and thus linking them to enhanced project outcomes/sustainability which could produce projects that are better aligned with the preferences and needs of the beneficiaries.

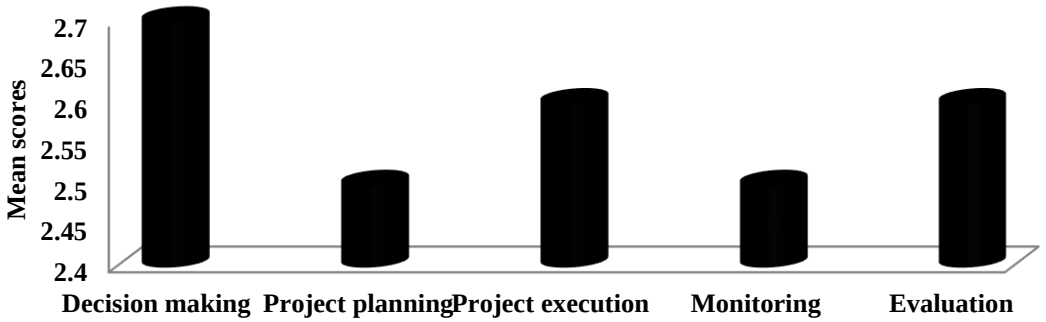

Figure 1: *Mean scores of USAID/MARKETS II farmers' participation in stages of programme development*

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Constraints to USAID/MARKET II Cassava Farmers' Participation in the Programme

The mean frequency distribution of respondents according to their constraints to farmers' participation in the programme is shown in Figure 2. The result revealed that USAID farmers affirmed that untimely supply of farm inputs ($\overline{X}$=2.8), bureaucratic bottlenecks ($\overline{X}$=2.7), poor counterpart support funding of the USAID MARKET II project by States ($\overline{X}$=2.3), non-transparency in disbursement of funds by the programme officials ($\overline{X}$=2.2) and lack of continuity of agricultural policies and projects were serious constraints. The mean constraint factor was 1.9, indicating that the respondent's encumbered moderate constraints participating in the prrogramme. This result corroborates with the findings of Muwaura *et al.* (2020) as they revealed that inadequacy of funds and late payment of counterpart funds among stakeholders as it affects facilitator's empowerment were constraints confronting implementation of donor-sponsored agricultural development prorammes in Africa. In the same vein, Uche *et al.* (2019) affirmed non-transparency in project fund disbursement to beneficiaries' and facilitators impede proper actualization of rural and agricultural development programme goals and objectives.

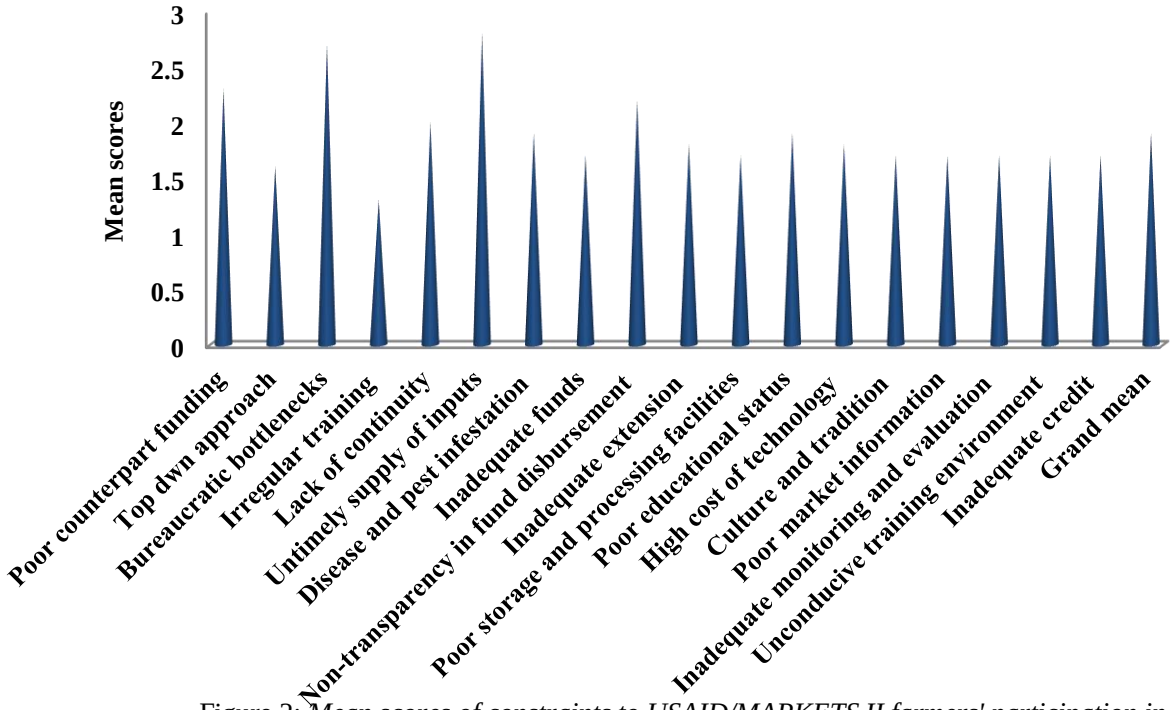

Figure 2: *Mean scores of constraints to USAID/MARKETS II farmers' participation in the programme*

Determinants of Selected Socio-economic Characteristics of the farmers and their Extent of Participation in the Stages of Programme Development

The results in Table 2 show the estimated results of the Tobit regression model analysis of USAID/MARKETS II socio-economic determinants of farmers' participation in the stages of programme development in the study area. The Chi^2 (X^2) of 68.79 was significant at 1.0% level of probability. The pseudo R^2 value of 0.6571 indicate 65.71% variability indicating a goodness of fit of the Tobit regression line. The coefficients for age (0.0579) and education (0.75980) were positively signed and highly significant at 1.0% level of probability. This implies that any increase in age and education will lead to increase in the participation of farmers in the stages of programme development. Akinbile *et al*. (2018) inferred that famers'

literacy levels encourage participation in non-governmental oragnisations in Ebonyi State Nigeria. The coefficient for farming experience (0.0743) was positively signed and significant at 5.0% level of probability. This implies that any increase in farming experience will lead to increase in the participation of farmers in the stages of programme development. A farmer's experience can generate or erode confidence. With more experience a farmer can become more or less averse to the risk implied in participating in the stages of programme development. The result is in agreement with Agbarevo and Meregini (2019) as they postulated that farmers experience has positive effect on the participation of beneficiary farmers in agricultural development programmes. The coefficient of farm size (-0.6078) was negatively signed and highly significant at 5.0% level of probability in the study area. This result is in conformity with the findings of Ogbonna and Nwaobiala (2016) as they found that farm size influences the expected output from a farm thereby influencing high participation in the stages of programme development. The coefficient for farm income (0.2784) was positively signed and significant at 5.0% level of probability. This is in agreement with *a prior* expectation. This implies that any increase in farm income will lead to an increase in participation of farmers in the stages of programme development. The result is in tandem with Ekwe *et al*., (2019) as they concur that farm income has positive effect on the livelihood outcomes of cassava farmers, thereby enhancing their participation in stages of programme development. The coefficients for amount of credit (0.5929) and membership of cooperative societies (0.5745) were positively signed and significant at 1.0% level of probability in the study area. This is in agreement with *a prior* expectation. This implies that any increase in credit received and membership of cooperative societies by beneficiary farmers increases their participation in the stages of programme development. This is probably because the bureaucratic bottlenecks associated with loan procurement in banks has been averted thereby increasing participation of beneficiaries in the programme The result concurs with the findings of Onu *et al*. (2019) and Okpokiri *et al*. (2018) as they opined that farmers access and use of credit increases the intensity of their participation in agricultural promoted programmes designed for framers, especially in developing countries as Nigeria. The coefficient of farm output (0.2643) was positively signed and highly significant at 5.0% level of probability in the study area. This implies is that increase in farm output will lead to the participation of farmers in the stages of programme development. This has the attendant effect to galvanize action that will produce significant gain which can motivate people to participate more fully in them. The result corroborates with the findings of Uzochukwu *et al.* (2021) and Nwaobiala, (2017) as he found that output from cassava farming influences farmers' participation in IFAD community-based programmes in Abia and Cross River Sates Nigeria.

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Table 4: Determinants of selected socio-economic characteristics of farmers' participation in USAID/MARKETS II stages of programme development in the study area

Variables	Parameters	Coefficients	Standard error	T-value
Constant	β_0	33.124	17.6644	10..20***
Gender	β_1	0.1178	0.0228	0.965
Age	β_2	0.0579	1.4440	6.23***
Marital status	β_3	0.1332	0.0053	0.211
Household size	β_4	- 0.1062	0.0145	0.87
Education	β_5	0.75980	0.0273	5.43***
Farm size	β_6	-0.6078	- 0.5864	-2.74**
Farming experience	β_7	0.0743	0.4452	2.56**
Amount of credit	β_8	0.5929	4.1928	13.72***
Occupation	β_9	0.0072	0.0094	0.027
Annual farm income	β_{10}	0.2784	0.1318	2.41**
Farm output	β_{11}	0.2643	0.6754	2.54**
Cooperative membership	β_{12}	0.5745	0.7036	11.23***
Chi^2 ($\varkappa^2$)		68.79***		
Pseudo R^2		0.6571		
Log likelihood		47.5491		

** $p \leq 0.05$ and *** $p \leq 0.01$
Source STATA 13 A Results (2020)

CONCLUSION AND RECOMMENDATIONS

The study has revealed that USAID farmers had high participation and moderate constraints to participation in the stages of programme development. Probit regression results showed that coefficients for age, education, farming experience, farm size, farm income, amount of credit received, farm output and membership of cooperatives determinants of farmers' extent of participation in the stages of programme development in the study area. The study therefore recommends that:

1. The specific needs and aspirations of farmers should be an integral part of the design of any agricultural intervention programme like employable programmes to achieve its goals and objectives.
2. Policy reforms should support income diversification of farmers, group formation access to education, credit and land to landless peasant farmers to increase farm output for effective participation in the stages programme development.

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