

Small-Scale Farmers Participation in Community-Based Extension Organizations: Implications for Increased Productivity, Income and Food Security in Kaduna State, Nigeria.

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Abstract

This study investigated small-scale farmers participation in community-based extension organizations and the implications for increased productivity, income and food security in Kaduna State, Nigeria. The study engaged both participants and non-participants of CBEOs. The respondents numbering 437 participants and its equivalent non-participants were drawn with the use of multi-stage sampling technique from 6 local governments areas in the State. Descriptive and inferential statistics were used to analyze the objectives and hypotheses of the study. Results revealed that the average length of community residence, age and household size of the CBEOs participants was respectively 14 years, 45 years and 7 persons, while that of the non-participants was 14 years, 50 years and 7 persons. The extent of farmers participation in carrying out most of group's activities was ascertained to be very regular. The difference in average farm income (₦119,908.46) was in favour of farmers participants. Multiple regression model showed that length of community residents, sex, age, educational status, household size, farm size, farming experience, length of CBEO membership and farm income significantly influence extent of farmers participation in group activities. The study thus recommends that the executive of the group should put in place some kind of incentive that will help to encourage farmers participation in group activities.

Keywords: farmers, participation, income, participants, challenges, community based extension organizations

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I. INTRODUCTION

Rural farmers play significant role in the economic development of Nigeria. They are known to contribute about eighty – five percent (85%) of total food produced in the country (Adebayo and Sorungbe, 2002). This volume of contribution accounts for why Adebayo and Sorungbe, (2002) stated that farming is their major activity and that is what most developing countries including Nigeria survives on. Eze *et al.* (2006) opined that the major reason for farming and the pre-occupation of man, most of whom live in the rural areas is to provide adequate quality and quantity of food for man. Eze *et al.* (2006) declared that the contribution of this rural sector towards food provision and food security seems to be declining steadily, though report of CBN (2012) attributed the decline to population explosion.

In revamping the trend, Adebayo and Okuneye (2005) advised that the rural farmers need to come together and participate in groups or farm extension organizations (otherwise also known as community based extension organizations) where policy programmes and investments of the government can be reaching and impacting on them through inputs, cash, agricultural advice provision as well as training from the extension arm of agriculture, ministries of the government and other agricultural service providers.

Community based extension organizations (CBEOs) exist in the forms of Lead Farmers, Extension Farmers, Model Famers, Community Agricultural Workers, etc. Farmers participation in such groups help or provide participants with the opportunity to improve on their livelihood and motivates the people to work together (Damar, 2003). Atlee (2008) advanced that farmers participation in CBEOs would allow and encourage the participants to address their needs and interests by themselves and therefore go a long way to yield good results in terms of productivity and farm income. FAO (2009) report also supported farmers participation in groups like CBEOs where stakeholders' have access and control over resources that bothers on the farmers and other impacting associated activities can be guaranteed. Erie (2009) guaranteed that participation of farmers in groups would avail them some extension services embedded in agricultural programmes like Special Programme for Food

Security, Fertilizer Revolving Fund, Special Rice Programme, The Presidential Initiatives on Cassava, Rice, Vegetable Oil, Cereals, Tree Crops, Livestock, etc. It is hoped that farmers participation in such programmes would be a linkage to extension services and farm innovations, all of which will help to improve farmers productivity and income. Toyibo and Muili (2008) emphasized that meeting up with food security through farmers participation in groups would demand for an assurance of active commitment of her members in the CBEOs they belong and the need for extension services providers to be meeting up with her responsibilities in where the farmers are. Against this background, this study seeks to investigate the extent of farmers participation in their group and the impact of Community Based Extension Organizations on farmers productivity, income and food security. On a precise note, the study seeks to: examine the personal characteristics of farmers and non-farmers of CBEOs in Kaduna State, ascertain the extent of farmers participation in CBEOs activities, comparative analysis of the impacts of farmers and non-farmers participation in CBEOs activities and identify the factors that are likely to limit farmers participation in CBEOs activities.

Hypotheses of the study

The hypotheses of the study were stated in their null forms:

- i. CBEO farmers socio-economic characteristics have no significant influence on the extent of their participation in CBEO activities.
- ii. There is no significant difference in farm income of farmers and non-farmers of CBEOs
- iii. There is no significant difference between selected socio-economic characteristics of CBEO and non-CBEO farmers.

II. METHODOLOGY

Area of Study

Kaduna State is one of the Northern States of the Federation of Nigeria and it is located in the North West Geo-political zone of the country, Nigeria (NAEC, 2008). It has 23 local government areas with the capital seat at Kaduna city. Kaduna State Wikipedida (2016) stated that the State's coordinates are 10^o20' N and 7^o45' E. Its land area is 46,053 km² thus ranking 4th in terms of land area, with 2016 projected population of 8,252,400 making it rank the 3rd state in terms of population size (NPC, 2018).

Major language popularly spoken by the people is Hausa, while English language stands as the official language (Kaduna State of Nigeria Information and Guide, 2016)

Agriculture is the main stay of the people with about 80% of them participating actively in farming crops like ground nut, maize, millet, rice, cotton, yam, beans, tobacco, guinea corn, ginger, cassava, just to mention but a few (Kaduna State of Nigeria Information and Guide, 2016). The state also has a tropical climate (in comparison to winter) with an annual temperature and humidity of 25.2^oC and 1211mm respectively (Kaduna Climate, 2016).

Sampling techniques and sampling size

The population of study comprised of farmers participating in Community Based Extension Organizations.

Multi-stage random sampling method was employed in selecting the respondents. Two agricultural zones out of the three existing were randomly selected (stage one). They are Kaduna Central and Kaduna South. From these, three local government areas (LGAs) were randomly selected from each of them, thus making it six (6) LGAs that was used for the study (stage two). Stage three involved the random selection of three communities from each of the local government areas. This brought the communities used to eighteen (18) (see Table 1 for the distribution of the communities and the local government areas they were randomly selected from).

Stage four has to do with the random selection of twenty-five (25) farmers from each of the communities and this made the farmers used for the study to be four hundred and fifty (450) community based extension farmers. An equivalent number (450) of farmers not participating in any community based extension organization was as well randomly selected in each case for the purpose of comparison where necessary. This made the number of farmers used for the study to be nine hundred (900) farmers. Efforts were made by the researchers to ensure that the CBEOs used for the study are in existence and functioning.

Table 1: Showing Distribution of Communities and number of farmers used for the study

Kaduna State Agricultural Zones	Local Government Areas randomly sampled	Towns randomly sampled for the study	Members of CBEOs	Non-members of CBEOs
Kaduna Central	Kaduna South	Badiko	25	25
		Barnawa	25	25
		Makera	25	25
	Kaduna North	Dako	25	25
		Gabasawa	25	25

		Unguwan Dosa	25	25
	Chikun	Sabon-Tasha	25	25
		Chikun	25	25
		Kuriga	25	25
Kaduna South	Kachia	Kachia	25	25
		Awon	25	25
		Katari	25	25
	Kaura	Kaura	25	25
		Garaji	25	25
		Biniki	25	25
	Sanga	Gwatu	25	25
		Aboro	25	25
		Ayu	25	25
Zones = 2	LGAs = 6	Community = 18	CBEOs members = 450	CBEOs non-members = 450

Sources of data

Primary and secondary data were used to meet the objectives of this study. The primary data were sought directly from the randomly selected farmers. While the secondary data were obtained from documented materials like journals, text books, conference proceedings and related Internet materials.

Data collection instrument

The basic tools that were used in getting data from the farmers were questionnaire and interview schedule. They were designed and structured to elicit reliable information from the farmers and they were respectively administered to the literate and illiterate farmers.

Validity and reliability of research instrument

The study applied the use of face content method to validate the question instrument, while test-re-test method was applied to ascertain the instrument's reliability. Reliability of the instrument was determined by administering the instrument two times though in the same month to a similar group of farmers and the data collected were then analyzed to obtain Correlation Coefficient (r). Correlation Coefficient ('r') value of 0.68 was obtained, and this implied that the instrument was reliable.

Procedure for data collection

The data collection instruments were personally administered by the researcher to the farmers within his area. Enumerators were also trained and used to distribute and retrieve the question instruments from the farmers. The enumerators were both males and females (given the peculiarity of the Northern part of Nigeria) and residents of the community in which the community based extension organizations are domicile. This was adhered to due to security challenges in northern Nigeria. Also included in the study for distribution of question instrument were the agricultural extension staff of the sampled Local Government Areas as well as staff of the agricultural development programme (ADP) in the respective LGAs and communities sampled for the study.

Data analytical techniques

Descriptive statistics used for the study involved frequency count, percentages as well as means. It was used to analyze the socio-economic characteristics of respondents and impacts of respondents' participation in CBEOs. Four point-Likert scale was used to ascertain extent of farmers participation in CBEOs and identifying the factors limiting participation in groups.

Respondents' extent of participation in CBEOs activities was measured on a 4-point Likert scale ranging from, "Very regular" (coded 4), "Regular" (coded 3), "Fairly regular" (coded 2) and "Not regular" (coded 1). A weight was used to capture extent of participation. Respondents' extent of participation in each activity was analyzed using mean. The weighted mean score of 2.50 was used to determine if their extent of participation in the activity was high (i.e. if mean \geq 2.50) or low (if mean $<$ 2.50). The weighted mean was determined as: $[4 + 3 + 2 + 1] / 4 = 2.50$. The factors limiting farmers participation in CBEOs activities were also measured on a four (4) – point Likert scale. The scale ranged from Strongly agree (coded 4), Agree (coded 3), Disagree (coded 2) and Strongly disagree (coded 1). The weighted mean score of 2.50 was used to determine which factors limit participation and those that did not. Factors with a mean score of 2.50 and above were considered as limiting factors to participation, while those with values less than 2.50 were regarded as not limiting.

Inferential statistics which include multiple regression was used to analyze hypothesis 1. It states: CBEOs farmers' socio-economic characteristics have no significant influence on their extent of participation in CBEOs activities.

$$Y = \text{Extent of participation}$$

$$X_1 = \text{Gender (sex) (male = 1; female = 0)}$$

X ₂	=	Age (years)
X ₃	=	Educational status (No formal educ. = 1; Primary educ. = 2; Secondary educ. = 3 and Post-Secondary educ. = 4)
X ₄	=	Household size (number of people living and feeding together)
X ₅	=	Farming status (full time = 1; part time = 0)
X ₆	=	Farm size (measured in ha.)
X ₇	=	Farming experience (measured in years).
X ₈	=	Income (₦)
X ₉	=	Years of residence in community (measured in years).
X ₁₀	=	CBEO group size (measured in number of persons)
X ₁₁	=	No. of Associations belonged to by members (measured in nos).
X ₁₂	=	Length of CBEO membership (measured in years).

Hypothesis 2 which states that: There is no significant difference in farm income of farmer members and non-members of CBEOs, was analyzed with t-test statistics. T-test was also used to analyze hypothesis 3 that states: There is no significant difference between selected socio-economic characteristics of CBEO and non-CBEO farmers.

T – test was used to determine the difference in farm income of farmers members and non-farmer members of CBEOs. The formula for t- test is as shown below:

$$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{(s_1^2/n_1 + s_2^2/n_2)}}; \quad df = n_1 + n_2 - 2$$

(Madukwe, 2005)

Where:

\bar{X}_1 = the mean of group 1

\bar{X}_2 = the mean of group 2

S₁ = standard deviation for group 1; S₂ = standard deviation for group 2

S₁² = variance of the first group; S₂² = variance of the second group

n₁ = size of the first group; n₂ = size of the second group

√ = square root

Decision rule for t - statistics

If the t – calculated is greater than the t – tabulated, we conclude that the estimate of the variable is statistically significant. That is, we reject the null and accept the alternative hypothesis. If on the other hand, t – tabulated is greater than t – calculated, we conclude that the estimate of the variable is not statistically significant. That is, we accept the null and reject the alternative hypothesis.

III. RESULTS AND DISCUSSION

The personal characteristics of the respondents

The results on personal characteristics are shown in Table 2. It revealed that in both categories, most of the participants (39.59%) and non-participants (46.45%) of the Community Based Extension Organizations (CBEOs), have spent the same number of years (10 – 14 years) in their communities of abode. Both categories also had the same average period of 14 years as the period they have spent in their respective communities. The result shows that most of the respondents have been residing in the community for a long period of time. It therefore implies that number of years community residents have spent in their communities do not have any strong influence on their willingness to participate in CBEOs. Though, it was asserted by the respondents through personal communication that participation in such groups like CBEOs have influenced and helped their farm income improved through increase in productivity. Results of Manda *et al.*, (2020) agreed with the above assertion. The authors indicated that farmers who reside longer in a particular locality show more willingness to belong to the local organizations in the community due to anticipated benefits. In the area of sex (gender); among the farmer participants CBEOs, males dominated the group (84.67%) while females were of a minority (15.33%). While most (86.50%) of the farmers non-participants of CBEO were males and few (13.50%) were females. The result implies that CBEOs are majorly patronized and dominated by the male farmers. Such dominance could be linked to the practice of purdah (this is a practice where women are kept in seclusion) since the people are predominantly Muslims. Male dominance in farming organizations agrees with reports of Abdullahi *et al.*, (2015) A larger proportion (80.09%) of the farmers CBEO members and non-members CBEO (81.01%) were married. The result showed that married persons dominated both the CBEO participants and the non-participants groups. Being married is an indication that they are matured, qualified to engage in sourcing for their economic livelihood and have a sense of responsibility to cater for their families. The report of Vabi *et al.*, (2020) supported this result reason being that, they found the dominance of married farmers amongst the group of farmers they engaged in

their study carried out in a similar area. The age of most (66.13%) CBEO farmers was between 40 – 49 years, while that of the majority (54%) of the non-participants of CBEO was between 50 – 59 years. The average age of the participants and non-participants farmers of the CBEO groups was 45 and 50 years respectively. The result simply implies the farmers are strong and in their active age category. The result is in line with that of Vabi *et al.*, (2020) which recorded similar age bracket (36 – 60 years) for the farmers in their study. The result as well revealed that the participants of CBEOs were comparatively younger than the non-participant farmers and this indicates that participation of younger farmers in CBEOs. Findings of Faruk and Maharjan (2022) showed consistency with this result.

The educational status of the respondents revealed that most (56.52%) of the participants of the CBEOs had primary school education while most (56.06%) of the non-participants of the group had no formal education. The result implies that there were more educated farmers participating in CBEOs than amongst their non-participant groups. Education has a way of enhancing farmers awareness of improved technologies and improving their agronomic skills. This result is in line with findings of Abdullahi *et al.*, (2015) which revealed that farmers who have formal education are found to participate more in similar groups than their illiterate counterparts. Results on religious affiliation showed that majority of farmers in both categories (CBEO participants = 63.62%; non-participants = 61.56%) were of Muslim religion. Findings showed that most of the respondents were of the Muslim religion and this may not be unconnected to the fact that the area of study is majorly composed of people who are Muslims by practice. Findings of Okwuokenye and Petu-Ibikunle (2021) concurred with this result as they found in their study that inhabitants of the area are Muslim dominated. The average household size of the participants and non-participants farmers was 7 persons for each group and the modal household size of farmers CBEO participants (44.39%) and non-participants (45.77%) was 4 – 6 persons. The result indicated that the respondents of both categories have people who depend on them for their economic livelihood. On the contrary, Etwire *et al.*, (2013) noted that household can be a proxy for family labour. This result on household size is corroborated by Okwuokenye and Akintoye (2016) who found a similar household size range of 4 – 6 persons amongst participants and non-participants of similar groups studied.

Table 2: Personal characteristics of respondents. N

Characteristics	Categories	Participants			Non-participants		
		Freq	%	Mean	Freq	%	Mean
Length of community residence (years)	<5	11	2.52		3	0.69	
	5-9	54	12.36		61	13.96	
	10-14	173	39.59		203	46.45	
	15-19	156	35.70		116	26.54	
	20+	43	9.84	14	54	12.36	14
Sex	Female	67	15.33		59	13.50	
	Male	370	84.67		378	86.50	
Marital status	Single	37	8.47		41	9.38	
	Married	350	80.09		354	81.01	
	Divorced	39	8.92		32	7.32	
	Widow(er)	11	2.52		10	2.29	
Age range (years)	<30	13	2.97		12	2.75	
	30-39	65	14.87		58	13.27	
	40-49	289	66.13		94	21.51	
	50-59	56	12.81		236	54.00	
	60+	14	3.20	45	37	8.47	50
Educational status	No formal educ.	45	10.30		245	56.06	
	Primary educ.	247	56.52		192	43.94	
	Secondary educ.	130	29.75		0	0.00	
	Post-secondary	15	3.43		0	0.00	
Religious affiliation	Christianity	126	28.83		137	31.35	
	Traditional	32	7.32		31	7.09	
	Muslim	278	63.62		269	61.56	
	Others	1	0.23		0	.00	
Household size	1-3	29	6.64		0	0.00	
	4-6	194	44.39		200	45.77	
	7-9	180	41.19		199	45.54	
	10-12	32	7.32		38	8.70	
	13+	2	0.46	7	0	0.00	7

Source: Field survey, 2022

Activities carried out by Community Based Extension Organizations (CBEOs)

The activities carried out by the different Community Based Extension Organizations (CBEOs) are shown in Table 3. Results revealed that the major activities carried out by the CBEOs as indicated by most (71.6%) of the group’s participants was savings and loans. Other activities carried out by the groups as indicted by 22.4%, 2.5%, 1.8%, 1.4% and 0.2% of the respondents respectively are training / skill development among participants of the groups, livestock farming, processing, crop farming and input supply.

Amongst all the activities, provision of savings and loans to group’s participants was the major activities carried out. The reason may not be unconnected to the lack of adequate capital that plagued the farmers and their farming operations thereby limiting their scope and operations and consequently, their production and income. Studies of Faruk and Maharjan (2022) agreed with this result that farmers in community based organization groups receive credit from both formal and informal sources for household income and that such opportunity elude farmers who are non-participants of similar groups. Results of Abegunde (2009) showed that farmers organizations give out loans/credits to their members and this accounts for a major reason why farmers belong to such organizations, believing that through such association credit would be provided for their farm work and thereby have their poverty status alleviated.

Table 3: Community Based Extension Organizations activities

CBEO Activities	FrequencyPercent	
Savings & loans	313	71.6
Training/ skill development among members	98	22.4
Livestock farming	11	2.5
Processing	8	1.8
Crop farming	6	1.4
Input supply	1	.2
Total	437	100.0

Source: Field survey, 2022

Activities showing extent of farmers participation in Community Based Extension Organizations (CBEOs)

The extent of participation of CBEO farmers in their activities is shown in Table 4. As revealed, the activities were rated and in the order of their weighted means. The participants appear to be very regular in abiding by the rules of the group they belong (mean = 3.28). Results of Abegunde (2009) is in agreement with this finding. He noted that a major activity carried out by agricultural group participants is abiding by the rules guiding the organization for the purpose of sustenance of the group. The respondents also claimed to be regular in attending Association’s / Club’s meetings (mean = 3.06). Eugene (2007) concurred with the result on regular attendance to meeting as a regular activity engaged in by the participants. Other regular activities showing the extent of participation of members are their payment of monthly dues (mean = 3.01), members participation in group’s activities (mean = 2.84), regular contribution in group discussion (mean = 2.77) and members commitment of personal resources to group’s activities (mean = 2.52). These findings are also consistent with the study of Okwuokenye and Akintoye (2016) which found group participants payment of monthly dues as regular activity carried out by them, regular participation in group discussion and members commitment of personal resources to the group they belong. The result implies that the members of CBEOs have regularly participated in their group’s activities and this may not be far from the benefits they could be deriving from participating in their various groups.

Table 4: Extents of farmers participation in Community Based Extension Organizations

Activities	Not regular		Fairly regular		Regular		Very regular		Total
	Freq	%	Freq	%	Freq	%	Freq	%	
How regularly do you abide by the rules of the group	0	.00	13	2.97	290	66.36	134	30.66	3.28 .5
How often do you attend Association’s/ Club’s meeting	0	.00	66	15.10	279	63.84	92	21.05	3.06 .6
How regular do you pay your monthly contribution or dues	2	.46	78	17.85	271	62.01	86	19.68	3.01 .6
How regularly do you participate in groups activities	0	.00	101	23.11	305	69.79	31	7.09	2.84 .5
How often do you contribute to group discussion	4	.92	130	29.75	267	61.10	36	8.24	2.77 .6
How regularly do you commit your personal resources to group’s activities	20	4.58	198	45.31	192	43.94	27	6.18	2.52 .7
How often have you invited /introduce potential/new members to this Association/Club?	66	15.10	210	48.05	932	21.28	68	15.56	2.37 .9

*Regular (mean > 2.50); Source: Field survey, 2022

Impact of farmers participation in Community Based Extension Organization Activities

The impact of farmers participation in Community Based Extension Organizations (CBEOs) was analysed in terms of income (₦) earned in Table 5. The result in general revealed that the performance in terms of income generated by participants from farm activity was higher than the non-participants farmers of CBEOs. The annual income level of the respondents revealed that most (48.05%) farmers that are CBEOs members earned an income of between ₦200,001 – ₦300,000, while most (79.41%) of the non-farmers CBEO members earned between ₦100,001 – ₦200,000. The average annual income of the farmers participants and non-participants was ₦280,892.45 and ₦160,983.98 respectively. The difference was ₦119,908.467 and it was in favour of farmers participants of CBEOs. The result however suggests that farmers participation in groups has indeed enhanced

farmers farm income. This result is consistent with the studies of Faruk and Maharjan (2022) which stated that annual income of farmers participating in Community Based Organizations is significantly higher than amongst non-participants.

Table 5: Comparative analysis of impacts of participation on farmers

Characteristics	Categories	Participants			Non-participants		
		Freq.	%	Mean	Freq.	%	Mean
Income level (annual)	<100,000	4	0.92		21	4.81	
	100,001-200,000	51	11.67		347	79.41	
	200,001-300,000	210	48.05		69	15.79	
	300,001-400,000	151	34.55		0	0.00	
	400,001-500,000	20	4.58		0	0.00	
	500,001+	1	0.23		0	0.00	
	Total	437	100.00	280,892	437	100.00	160,984

Source: Field survey, 2022

Challenges limiting respondents’ participation in Community Based Extension Organizations (CBEOs)

The respondents of the study are known to be plagued by some challenges and these challenges go a long way in not only affecting the members level of participation in the group they belong but also the performance of the group in meeting with its objectives and goals. Some of the identified challenges are shown in Table 6. The first, second and third ranking challenges were low participation of members in the management of the organization’s activities (mean = 3.33), Most of the organization activities been hijacked by Politicians (mean = 3.31) and High rate of illiteracy among members (mean = 3.31). Through personal communication, the respondents acknowledged that the issue of low members participation was associated to just few persons amongst them. While the challenge of hijacking organization’s activities by politicians and high rate of illiteracy among members were backed by findings of Abdullahi, *et al.* (2015) which identified poor leadership and lack of awareness which may have emanated from the prevalence of illiteracy amongst the people.

Other challenges were Member’s refusal to repay loans (mean = 3.30), Insurgency / banditry / Conflict (3.27) and High dues and levies (mean = 3.04). The refusal to repay loans has resulted to inadequate capital, thus making capital to be unavailable to other members of the group. Abdullahi, *et al.* (2015) agreed with this result that identified inadequate capital as a major challenge. The issue of insurgency / banditry / conflict being a major challenge is supported by Aigbedion *et al.* (2020) who noted that insurgency has greatly and negatively influenced the level of human mobility and by extension human association in groups. Again, the participants being resource poor farmers are plagued with inadequate finance and that is why they identified the dues and levies they pay as high and thus constitute a major challenge to participation in groups. Nevertheless, Farinde and Adisa (2005) reports agreed with high dues and levies as a major challenge of farmers participation in agricultural groups. Going further, other challenges include Lack of government assistance (mean = 2.98), Corrupt and dishonest leadership (mean = 2.74) and Failure to distribute benefits amongst members (mean = 2.60). Okwukenye and Akintoye (2016) results were in line with these findings which narrated lack of government assistance, Corrupt and dishonest leadership and Failure to distribute benefits amongst members as major challenges affecting participation of farmers in farmers group. The authors identified poor leadership style of the organization’s executive as well as unfair / bias in the distribution of works and benefits as important participation constraints.

Table 6: Challenges limiting farmers participation in CBEOs

Problems	Strongly disagree		Disagree		Agree		Strongly agree		Total
	Freq	%	Freq	%	Freq	%	Freq	%	
Low participation of members in the management of the organization’s activities.	0	0.00	34	7.78	225	51.49	178	40.73	3.330.6
Most of the organization activities been hijacked by Politicians	0	0.00	41	9.38	218	49.89	178	40.73	3.310.6
High rate of illiteracy among members.	4	0.92	36	8.24	218	49.89	179	40.96	3.310.7
Member’s refusal to repay loans	4	0.92	34	7.78	228	52.17	171	39.13	3.300.6
Insurgency / banditry / Conflict	2	0.46	45	10.30	224	51.26	166	37.99	3.270.7
High dues and levies	3	0.69	77	17.62	255	58.35	102	23.34	3.040.7
Lack of government assistance	19	4.35	18	4.12	351	80.32	49	11.21	2.980.6
Corrupt and dishonest leadership	52	11.90	59	13.50	278	63.62	48	10.98	2.740.8
Failure to distribute benefits amongst members	69	15.79	68	15.56	267	61.10	33	7.55	2.600.8
Poor organization of group’s activities	36	8.24	230	52.63	133	30.43	38	8.70	2.400.8
Poor capital base for farmers to be meeting up with group’s activities	89	20.37	218	49.89	83	18.99	47	10.76	2.200.9
Wrong timing of organization’s activities	155	35.47	80	18.31	167	38.22	35	8.01	2.191.0
Failure to meet members goals	59	13.50	271	62.01	92	21.05	15	3.43	2.140.7

*Serious (mean > 2.50)

Source: Field survey, 2022

Influence of Community Based Extension Organization (CBEO) farmers socio-economic characteristics on extent of their participation in CBEO activities

Hypothesis one (CBEOs farmers' socio-economic characteristics have no significant influence on their extent of participation in CBEOs activities) was analyzed with the use of multiple regression analysis technique. It was carried out to find solution to the relationship between CBEOs farmers socio-economic characteristics and their extent of participation in CBEOs activities. Table 7 shows the multiple regression results and the model had twelve explanatory variables which jointly accounted for about 59% variation in the dependent variable (extent of participation in CBEO activities). The multiple regression model was however considered as the most appropriate for the analysis and significant at the 5% level since the calculated F-ratio was 2.196 as against the tabulated F-critical (1.75). Since the F-cal is greater than F-critical, the alternative hypothesis was adopted and it thus states that: CBEOs farmers' socio-economic characteristics have significant influence on their extent of participation in CBEOs activities. The explanatory variables (socio-economic characteristics) that were significant at the 5% level were length of community residents, sex, household size and length of CBEO membership. On the other hand, age, educational status, farming size, farming experience, and annual income were significant at the 1% level. The variables are further discussed as follows:

Length of community residence has a beta coefficient of -0.503 and a t-value of -2.055. The variables were negatively related but significant at the 5%. The result implies that farmers who have spent more years in their community residence are more unwilling to participate in Community Based Extension Organizations. This finding of this study contradicts that of Ofuoku and Urang (2009) who stressed positive relationship between the number of years farmers stay in their communities and their willingness to participate in community farmers organizations. Gender (sex) was positively signed and significant at the 5%. The beta coefficient was 5.104 while the t-value was 2.177. Since male constitute the majority (84.67%) it therefore implies that the involvement of more males in farmers community groups will lead to more participation in group's activities. The study area is Muslim dominated and does not give women the liberty to mingle or associate freely and this accounts for why male participate more in group's activities. This finding is in line with results of Nxumalo and Oladele (2013) which indicated that more males are likely to participate more in agricultural groups and their activities. Age of the respondents was positively signed and significant at the 1% level to group members participation in CBEOs activities. The beta coefficient and t-value was 3.097 and 10.937 respectively. By implication, older farmers (in terms of age) are likely to participate more in CBEOs activities than their younger counterparts. Supporting this finding is the result of Nxumalo and Oladele (2013) which found a positive relation between farmer age and their willingness to participate in group's activities.

Community Based Extension Organization farmer members educational status was positively signed and significant at the 1% level. Its beta coefficient was 0.030 while the t-value was 3.622. The positive sign is an indication that farmers that are more educated are likely to be more willing to participate in CBEOs. Education has a way of enhancing a farmers ability to source and use vital information that could be used to better their production and livelihood. This result is in agreement with the findings of Abdullahi *et al.* (2015) that expressed farmers educational level to be positively signed with their level of participation in farmers group organizations. Household size (beta = -0.047; t-value = -2.144) was negatively signed but significant at the 5% level. Household size could be a source of farm labour while on the contrary, it could be a source of economic drain to the household. However, this result is in conformity with that of Oladejo *et al.* (2011) who reported a negative relationship between farmers household size and participation in agricultural groups activities. Results on respondents farm size was found to have a positive relationship and significant at the 1% level with members participation in CBEOs activities. The beta coefficient and t-value was 0.023 and 4.688 respectively. By implication farmers who are members of CBEOs are more likely to participate in groups and group activities. Increasing farm size will make farmers to participate more in CBEOs activities in other to make them eligible for accessing resources like funds, other inputs and technology. Similar result regarding positive relationship between farm size and farmers participation in group's activities was recorded by Faruk and Maharjan (2022).

Farming experience of the respondents had a beta coefficient of 0.025 and t-value of 3.509. The relationship was positive and significant at the 1% level. The result implies that an increase in farming experience will necessarily lead to an increase in farmers participation in CBEOs activities. The result of Okwuokenye and Okoh (2018) was in line with this finding as they found that participants of the Growth Enhancement Support Scheme (GESS) (a scheme synonymous to CBEOs) earned higher income than their non-participant counterparts and the difference in income earned in their favour was attributed to, amongst other factors their relatively longer period spent in farming which afforded them the necessary opportunity to participate more in the programme that helped to endow them with more skills and farm practice resulting to higher output and income. The beta coefficient and t-value of the respondents length of membership of CBEOs was -0.179 and -2.377 respectively. The relationship was negatively signed and significant at the 1% level. The result implies that the more years farmers spend in CBEOs, the less willing they would want to participate in the groups they belong. Such is bound to happen as members who have longer years may want to claim leadership and leave above the law which can be exhibited by unwillingness to participate in group's activities. The result however disagrees with the report of

Katungi and Akankwasa (2008) which stated that farmers that have spent more years in their group do have more interest in group’s activities and tend to participate more in group affairs. The annual income level of farmers participants had a positive and significant relationship with level of participation in CBEO activities. Beta coefficient of 0.029, t-value of 4.602 and a 1% significant level was recorded for annual income level of farmers participants. This implies that the more farm income realized, the more willing they are likely to participate in CBEOs activities. Farmers with higher income may be used as models to train, reach and mentor other low-ranking farmers in their group. Similar result was found by Faruk and Maharjan (2022), according to which higher farm income level of farmers positively correlates with their level of participation in CBEOs activities.

Table 7: Relationship between respondents’ socio-economic characteristics and participation in CBEO activities (Multiple regression)

Variables	Standardized Coefficients (Beta)	t-value	Prob. level
(Constant)		19.208	.000
Length of community residence (yrs)	-0.503*	-2.055	0.006
Sex	5.104*	2.177	0.003
Age (years)	3.097**	10.937	0.002
Educational status	0.030**	3.622	0.005
Household size (no.)	-0.047*	-2.144	0.045
Farming status	-0.033	-0.470	0.492
Farm size (ha)	0.023**	4.688	0.038
Farming experience (years)	0.025**	3.509	0.001
CBEO group size (no.)	-0.016	-0.334	0.738
No. of Associations belonged to	0.000	0.001	0.999
Length of CBEO membership (yrs)	-0.179**	-2.377	0.001
Income level (annual)	0.029**	4.602	0.018

*Significant at the 5% level; **Significant at the 1% level;

$F = 2.196$ ($p < 0.050$); $R^2 = 0.59$; Critical $t = 1.960$; Significant at 5% (Critical $F = 1.75$)

4.2.2 Test of difference in farm income of farmer members and non-farmers of Community Based Extension Organizations (CBEOs)

Hypothesis two stated that there is no significant difference in farm income of farmer members and non-members of CBEOs. Table 8 shows the result of the average income of both groups of farmers. The average income of the farmers participants of CBEOs was ₦280,892.98 while that of the non-participants was ₦160,983.98. The participant farmers average income was higher than that of the non-participant farmers. The difference in average income was ₦119,908,467 and it was in favour of the CBEO farmers participants.

The difference in average income (₦119,908,467) is significant at the 1% level. The decision was drawn from the fact that t-calculated value = 27.97 is greater than the t-tabulated value which is 2.576. For this reason, the null hypothesis was rejected in favour of the alternative hypothesis which states that: there is significant difference in farm income of farmer members and non-members of CBEOs. Based on the result, it could be inferred that farmers participation in CBEOs has helped in improving the farmers knowledge, skills and practice which has resulted in higher productivity and income. The finding of this study supports that of Etwire (2013) who observed that being member of farmers organization such as CBEOs will help them to participate effectively in agricultural projects in-line with accessing institutional or production credit in order to increase their production capacity and farm income. Etwire (2013) further confirms another advantage derived by farmers in participating in CBEOs to access of extension services which also help to increase farmers skill, practice and consequently, their productivity and income.

Table 8: Effects of participation in Community Based Extension Organizations on income level of respondents

Participant Status	N	Income		Difference	T test	Prob. level
		Mean	SD			
Participants	437	280,892.45	78004.8	119,908.467	27.97*	P < 0.05
Non-participants	437	160,983.98	44082.8			

*Significant at the 1% level (Critical t-value = 2.576); **Significant at the 5% level (Critical t-value = 1.96)

Difference in means of socio-economic characteristics between CBEO & Non-CBEO farmers

The particular interest in this section of the study is to analyze the impact of some mean difference of the respondents on their farm income. The mean difference of the socio-economic characteristics between Community Based Extension Organizations (CBEOs) and non- Community Based Extension Organizations participating farmers are shown in Table 9. Out of the six socio-economic characteristics analysed, apart from length of community residence (years) that was not significant, the other five variables were significant and they include: age (years), educational status, household size (number of persons living and feeding together), farm size (ha.) and farming experience (years). A further analysis revealed that:

Age of the farmers had a mean difference of -5.378 and a t-value of -9.58. The mean difference was negatively signed and significant at the 1% level. The implication of the result is that the more the difference in mean age of the different farmers groups (participants and non-participants of CBEOs), the lower the expected income earnings from their farming activities. It therefore means that, an expectation of more impact of farmers age on income would require employing strategies that would help reduce the negative impact between the ages of the two groups. Khan *et al.* (2012) concurred with this finding since they observed a decline in farmers willingness to participate in groups activities, resulting in lower income as they advance in age. The mean difference of the educational status of the farmers was 0.824 and a t-value of 20.35. The relationship was positive and significant at the 1% level. The result implies that the more educated the farmers are, the more their farm income earnings would be, all things being equal. Being educated implies they can read, write and require little or no assistance in the application of farm innovations. Education enhances farmers ability and capacity to acquire farm training and skills that will enable them do better in their farming operations. The result of Etwire *et al.* (2013) is in agreement with findings of this study. The authors advanced that formal education helps in impacting literacy and numerical skills which are necessary for farm planning, budgeting and comprehension of good agronomic skills that can lead to high productivity and farm income.

The mean difference for household size and t-value was -0.371 and -2.63 respectively. The association of the variables show negative relationship which was significant at 1% level between household size and income. The result shows that higher household size will result to reduction in farm income. An increase in household size may result to economic drain of the farmers income especially when more of the household members are dependants. The finding agrees with that of Oladejo *et al.* (2011) who reported negative relationship between farmers household size and participation in groups activities and this will consequently and negatively affect their production level and income capacity. Mean difference of respondents' farm size was 0.888 and the t-value was 9.52. The relationship of farm size and income level was positive and significant at the 1% level and thus implies that the higher the difference in mean of farm size, the more farm income earnings. This finding is synonymous with reports of Faruk and Maharjan (2022) who reported a positive relationship of between farmers farm size and their level of participation in their groups which consequently by extension, extends to higher income earnings of the farmers. Farm experience of the respondents had a mean difference of 4.151 while the t-value was 17.33. The relationship of farming experience was positively signed and significantly related to income earnings at the 1% level. The implication of the result is that farmers who have more farming experience do not only have higher level of participation in groups activities but also consequently giving rise to farmers income earnings. The result is similar to that of Achoja and Ugege (2015) who stated that farming experience has a positive relationship to farm income earned by farmers.

Table 9: Difference in selected socio-economic characteristics between CBEO & Non-CBEO farmers [T-Test]

	N		Mean		Std. Deviation		Mean Difference	T	df	Prob.L level
	P	N-P	P	N-P	P	N-P				
Length of community residence (yrs)	437	437	13.92	13.8	4.498	4.453	0.121	0.40	872	0.69
Age (years)	437	437	44.84	50.22	7.245	9.225	-5.378*	-9.58	872	0.00
Educational status	437	437	2.26	1.44	0.685	0.497	0.824*	20.35	872	0.00
Household size (no.)	437	437	6.52	6.89	2.241	1.917	-0.371*	-2.63	872	0.01
Farm size (ha)	437	437	3.18	2.29	1.096	1.611	0.888*	9.52	872	0.00
Farming experience (years)	437	437	11.665	7.514	4.4625	2.2701	4.151*	17.33	872	0.00

*Significant at the 1% level (Critical t-value = 2.576);

IV. Conclusion and Recommendations

The study analyzed the impact of small-scale farmers participation in CBEOs and the results revealed that farmers participation in CBEOs activities was very regular for most of the activities and this resulted to a positive influence on farmers income and this was manifested in the difference (₦119,908.467) in farm income in favour of participants farm income. Several socio-economic variables like length of community residents, sex, household size, length of CBEO membership, age, educational status, farming size, farming experience, and annual income were found to have significant influence on their extent of participation in CBEOs activities. It was however found that the more the farmers participation in their different farm groups, the more income they get from their farming activities. The mean difference of some socio-economic characteristics of CBEO and non-CBEO farmers showed that educational status, household size, farm size and farm experience impacted positively

on farmers farm income. Based on result, it could be said that participation of farmers in community groups has positive influence in the farmers farm income and so it should be encouraged. The farmers acknowledged that their participation in CBEOs was constrained by several factors and upon these, the study recommends that:

- i. The executive of the group should put in place some kind of incentive that will help to encourage farmers to participate more in group activities. Such participation will help to make it more interesting for the farmers and as well help to increase their farm income.
- ii. There is a need to ensure that the CBEOs are not politically affiliated and bound in any way. Such assurance will make it difficult for any external influence and guarantee more participation in groups.
- iii. Efforts should be made to reduce the illiteracy level of members of CBEOs. This can be achieved through organizing adult literacy classes and try to encourage members to attend so that their participation level can as well be enhanced and have their income increased, and
- iv. There should be adequate strategies in place like ensuring the provision of guarantors before members are allowed to or given loans. Having this measure in place, will help to ensure that money collected as loans are paid back. In addition, members integrity should be checked through starting them with small amount of money.

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