ASSESSMENT OF THE EFFECT OF FARMER FIELD SCHOOL ACTIVITIES ON THE LIVELIHOOD OF SMALLHOLDER RURAL COCOA FARMERS IN KWARA STATE, NIGERIA

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ABSTRACT

The study assessed the effect of farmer field school (FFS) on the livelihood of smallholder cocoa farmers in Kwara State, Nigeria. Descriptive survey design was used to conduct the research. A purposive sampling procedure was used to select 160 smallholder rural cocoa farmers who participated in the FFS activities in Kwara State. An interview schedule was used as an instrument for data collection. Data were collected on the socio-economic characteristics of the smallholder rural cocoa farmers, yield, income, house expenditure, household assets, and the constraints faced by the smallholder rural cocoa farmers. Data collected were analysed using means, frequency counts, percentages, and linear regression at a 0.05 level of significance. The result shows that 91.3% of the respondents were male and also there was an increase of 415kg of cocoa yield after participating in FFS. The result showed participating in FFS activities increased the yield, income, expenditures, and household assets of smallholder rural cocoa farmers. But statistically, there were no significant effects on yield, income, household expenditure, and household assets at p- values of 0.156, 0.892, 0.269, and 0.631 respectively. The findings conclude that FFS activities had no significant effects on yield, income, household expenditure, and household assets and these may be due to inadequate training facilitators faced by the smallholder rural cocoa farmers. The study recommends that the Kwara State Ministry of Agriculture should recruit, train, and retrain more facilitators and set proper monitoring and evaluation processes in other to make FFS activities more functional.

Keywords: ***Farmer Field Schools, Livelihood, Rural Farmers***

INTRODUCTION

Farmer Field School (FFS) is a widely used extension and education method all over the world whose aim includes building farmers' capacity to analyze their production systems, identify problems, test possible solutions and eventually adopt the practices most suitable to their farming system (Ayi, 2022). Farmer Field Schools is a platform, "Schools without walls" a platform where farmers discuss observations and apply their prior experiences in a forum facilitated by trainers, while also learning new ones and applying them to their unique situations. One of the best delivery strategies ever *created is FFS and t*his strategy has superseded earlier agricultural extension initiatives, in which It was required of farmers to follow broad guidance issued by specialists from outside the community (Manoj and Vijayaragavan, 2014). A group of 20 to 30 farmers as well as extension agents make up FFS. Farmers are considered students in FFS, fields are considered classes, and facilitators are considered teachers. The learning environment is agricultural fields, in which extension staff assists farmers in developing analytical and innovative thinking, improving analytical skills, and making superior decisions, which

are based on the farmers' observations combined with scientific knowledge contributed by extension staff and researchers (Ayi & Undiandeye, 2022). It is expected that FFS will improve the livelihood of smallholder rural cocoa farmers.

Cocoa *(Theobroma cacao)* is an important cash crop in which small-holder rural farmers are involved in its cultivation and whose livelihood depends on its farming. Despite the importance of cocoa to the livelihoods of rural farmers and the economy at large, its production is characterized by traditional methods of production and low levels of technological use. Cocoa contributes greatly to the economy of Nigeria, and it was one of the leading agricultural exports and a top foreign exchange earner in the 1950s and 60s before the discovery of oil. Cocoa is grown in Ondo, Ogun, Osun, Oyo, Ekiti, Cross River, Akwa Ibom, Delta, Rivers and Kwara State in Nigeria. The estimated land area cultivated for cocoa in Kwara State is 5140 hectares and the estimated yield is 1430MT (Afolayan, 2020 cited National Bureau of Statistics (NBS), 2013).

Cocoa production witnessed a slight rise in 2010 which was followed by a continuous decline in annual cocoa production from 2011 – 2016 (Ajagbe, Asogwa, & Ezihe, 2021). Olusuyi (2016) identified that the decline in production was due to a lack of infrastructure, an incidence of pests and diseases, and a lack of funds from the government to young cocoa farmers. This has prevented the Nigerian cocoa farmers from meeting the target set of 500,000MT by the International Cocoa Organisation (ICCO) and has affected the productivity, and livelihood and consequently resulted in a huge loss of revenue amounting to $1 billion yearly (Eze, 2018).

The Nigeria cocoa production index shows that farmers are generally producing at or below capacity. Nigeria, for example, produced 270,000 metric tons in 2019 and 250,000 metric tons in 2020. (Vincent, Eyo & Bola, 2021). This indicates a decrease in production rather than an expected increase. Despite various programmes that have been implemented by the Kwara State government, the incidence of pests and diseases continues to alter cocoa yield (Agbongiarhuoyi *et al.*,2013). FFS was introduced to ensure smallholder rural cocoa farmers can produce at their maximum capability based on the integrated pest management (IPM) of FFS. It is expected that FFS will increase the farmers' skills, knowledge, yield and income. It is for these reasons that this study deemed necessary to examine the FFS activities as a strategy to enhance the livelihood of smallholder rural cocoa farmers in Kwara State, Nigeria.

Objectives of the study

The main objective of the study was to assess farmer field schools as a strategy to enhance the livelihood of smallholder rural cocoa farmers in Kwara State, Nigeria. The specific objectives of the Study were to:

i) describe the socio-economic characteristics of smallholder rural cocoa farmers in Kwara State;
ii) determine the difference between yield and living standard of smallholder cocoa farmers before and after participation in FFS;
iii) identify the constraints faced by cocoa farmers participating in farmer field school activities in Kwara State, Nigeria.

Hypothesis

Ho1: Farmer Field Schools activities have no significant effects on yield and living standard of small-holder cocoa farmers in Kwara State, Nigeria.

METHODOLOGY

This study was carried out in Kwara State, Nigeria. There are sixteen (16) local government areas in the state, out of which five (5) have FFS. These are Isin, Oyun, Offa, Ifelodun and Irepodun. There are two farmer field schools in Irepodun making a total number of six (6) FFS in Kwara State. The population of the study comprises all the 180 smallholder cocoa farmers that participated in the FFS activities in Kwara State. Out of the 180 farmers, 20 of them were used for a pilot study while the remaining 160 farmers were involved as respondents. A purposive sampling technique was used to select the 160 respondents from all the five Local Government Areas in the study area. An interview schedule was used to collect the data from the respondents. The pilot study yielded a Guttman Split-Half reliability coefficient of 0.73, this connotes 73% reliability. Descriptive statistics in the form of mean, frequency counts and percentages were used to answer the research questions. Linear regression was used to test the null hypothesis at a 0.05 level of significance.

RESULTS AND DISCUSSION

The result presented in Table 1, shows that 91.3% of the respondents were male. This implies that a majority of cocoa farmers who participated in FFS were male. Cocoa production in Kwara State is largely dominated by male farmers perhaps aligned with the general belief that cocoa farming is laborious. Similarly, this may be because Cocoa farming requires tedious operations such as bush clearing, chemical application, pruning and harvesting of pods. This finding is in line with that of Faloni, Tijani and Kehinde (2022) who stated that the majority of the cocoa farmers were male. It also agreed with the findings of Ogunya and Tijani (2022) who reported that the majority of the cocoa farmers were male. The result revealed that the average age of small-holder cocoa farmers in Kwara State was 52 years with a Standard Deviation of 9.50. This showed that aged people are still the ones engaged in Cocoa farming. This finding negates with that of Ogunkunle, Olarinde, Adebusola, Adepoju and Adio (2022) who reported that the majority of the cocoa farmers with a mean age of 54.45 years are very active. The result shows that the majority (51.9%) of the small-holder cocoa farmers had greater than 1 to 3 hectares of land with a mean of 2.01(ha) farm size and standard deviation of .696. This finding is also similar to that of Owolabi and Okunlola (2015) who reported that the majority of small-holder farmers have an average farm size was 2.5 hectares.

Further, the study shows that small-holder cocoa farmers had received one form of education. This finding agreed with that of Aneaeto *et al*. (2017) who discovered that most of FFS participants received some form of education. The result shows that most (49.4%) of small-holder cocoa farmers had 10–20 years of farming experience with a standard deviation of 6.333. This implies that most of the small-holder cocoa farmers were experienced in cocoa farming. This result agrees with the findings of Ayi (2022) who stated that FFS farmers had farming experience of 11-20 years. This also aligned with the finding of Ogunkunle *et al*. (2022) who reported that the farming experience of most respondents fell within the range of 11-20 years. The result shows that above half (53.1%) of small-holder cocoa farmers had 6 to 10 household size with a standard deviation of 2.578. This implies that the majority off the smallholder cocoa farmers had a large household size. The finding is in line with that of Ogunkunle *et al. (*2022) who reported that most of the cocoa farmers household size fell within the range of 6-10. This negates the finding of Julis and Jimoh (2020) who stated that farmers had family sizes of between 7 and 9 household size.

Table 1: Descriptive results of socio-economic characteristics of small-holder cocoa farmers in Kwara State, Nigeria

Variables	Frequency (n=160)	Percentage	Mean
Sex			
Male	146	91.3	
Female	14	8.7	
Age (Year)			
30-45	39	24.4	Mean=51.50
46 - 60	96	60.0	SD=9.506
>60	25	15.6	
Farm size (Hectares)			
≤1	38	23.8	Mean=2.01
>1-3	83	51.9	SD=.696
>3-5	39	24.4	
Farming Experience (Years)			
< 10	28	17.5	Mean:17.93
10 - 20	79	49.4	SD:6.333
Above 20	53	33.1	
Household Size (persons)			
< 5	3	1.9	Mean = 9
6-10	85	53.1	SD = 2.578
11 and above	72	45.0	
Education			
No formal education	15	9.2	
Quranic education	11	6.9	
Primary education	63	39.4	
Secondary education	47	29.4	
Tertiary education	14	8.8	
Adult education	10	6.3	

Source: Field Survey (2023)

The result presented in Table 2, shows that majority (71.9%) had access to credit facility. The result also shows that majority (68.7%) sourced credit through friends and relatives. This implies that majority of the small-holder cocoa farmers sourced their credit through friends and relatives. The finding negates that of Faloni *et al.* (2022) who found that majority of the cocoa farmers had no access to credit facilities.

Table 2: Distribution of the respondents according to access to credit facilities

Variables	Frequency (n=160)	Percent
Access to credit facility		
Do not have access	45	28.1
Have access	115	71.9
Sources of credit		
Commercial Banks	7	6.1
Cooperative Society	25	21.7
Money lenders	4	3.5
Friends and Relatives	79	68.7

Source: Field Survey (2023)

The result in Table 3, shows that one quarter (25%) of the cocoa farmers had access to farm inputs. also, the result shows that 15%, 62.5% and 5%, respectively got seeds, agro - chemicals and farm implements at subsidized rates. This implies that majority of the small-holder cocoa farmers had no access to farm inputs. This is in conformity with the findings of Oke, Kehinde and Akindele (2019) that smaller percentage of cocoa farmers had access to credit.

Table 3: Distribution of the respondents according accessibility to subsidized farm inputs

Variables	Frequency (n=160)	Percent
Access to farm inputs		
Do not have access	120	75.0
Have access	40	25.0
Subsidized Inputs (n=40)		
Seeds	6	15
Fertilizers	25	62.5
agro-chemicals	7	17.5
farm implements	2	5

Source: Field Survey (2023)

The result in Table 4 shows the average cocoa yield before and after FFS were 966kg and 1381kg respectively. This shows an increase of 415kg after participating in FFS. The average income for before and after participation in FFS was ₦957,629 and ₦1,467,484. This shows an increase of ₦509,855 in farmers' income after participating in FFS. The findings revealed further that, the average monthly expenditure of cocoa farmers before and after FFS were ₦46,244, and ₦61,975 respectively. This shows an increase of ₦15,731 in farmers' expenditure after participating in FFS. This is in line with Bhuiyan and Mahrajan (2022) who stated that FFS activities increase farmers income.

Table 4: Difference between yield, income and expenditure of small-holder cocoa farmers before and after participation in FFS.

Variables	Sub-Variable	Before	Mean Before	After	Mean After
Cocoa Yield (kg)	<500	37(23.1)	M=965.86,	1(0.6)	M=1381.29,
	500 – 1000	69(43.1)	SD=1107.152	41(25.6)	SD=1634.62
	> 1000	54(33.8)		118(73.8)	
Annual Income (₦)	< 100,000	2(1.3)	M=957629,	1(0.6)	M=1467484,
	100,000 - 500, 000	25(15.6)	SD=455234	4(2.5)	SD=613097
	>500,000	133(83.1)		155(96.9)	
Expenditure (₦)	<50,000	115(71.9)	M=46244,	36(22.5)	M=61975,
	50,000 - 100, 000	44(27.5)	SD=34808	124(77.5)	SD=21076
	>100,000	1(0.6)		0(0)	

Source: Field Survey (2023) **Figures in parenthesis are percentages**

The result in Table 5 shows the constraints faced by cocoa farmers participating in FFS activities in Kwara State. The constraints were ranked according to the magnitude as stated by the farmers. The result show that inadequate trained facilitators (93.8%) ranked first followed by school location (88.8%). Again, scarcity/inadequate land for practical ranked the least with (20%). This reveals that most salient constraint encountered by the participants were inadequate trained facilitators, School location, lack of social amenities, limited time to make field preparations and unreliable weather information. This is in line with the findings of David *et al.*, (2017) who observed that limited time to make field preparation and unreliable weather information are constraints faced by farmers that participated in FFS.

.**Table 5: Descriptive analysis of Constraints faced by cocoa farmers participating in FFS activities in Kwara State, Nigeria**

Constraints	Frequency	Percentage	Rank
Inadequately trained facilitators	150	93.8	1
School location	142	88.8	2
Inadequate Social amenities	136	85.0	3
Limited time to make field preparations	90	56.3	4
Unreliable weather information	83	51.8	5
Inadequate Farm implements	78	48.8	6
Inadequate Instructional facilities	69	43.1	7
Inadequate funding	40	25.0	8
Scarcity of or inadequate land for practical	32	20.0	9

Source: Field Survey (2023)

Result in Table 6 shows that FFS activities do not have a significant effect on small-holder cocoa farmers yield (β -393.721 and S.E. 1629.366), income (β -14129.345 and S.E. 614997.986) and expenditure (β-3962.454 and S.E. 21060.864) with p-value (0.16, 0.89 and 0.27) greater than the alpha value of 0.05. The null hypotheses which state that FFS have no significant effect on the yield and living standard of cocoa farmers in Kwara State is hereby accepted. The result shows that FFS had no significant effects on the yield and living standard of small-holder cocoa farmers in Kwara State, Nigeria. This is not in line with the finding of Gbawoquiya (2017) who reported that FFS improved agricultural productivity among rice farmers. The finding also differs from the results of the study of Cai, Shi and Hu (2016) who reported that FFS had a positive impact on the yield of tomatoes in Beijing. The study revealed that FFS had no significant effects on the income of small-holder cocoa farmers and this is contrary to the findings of Bhuiyan and Mahrajan (2020) who reported that FFS had a positive effect on farmers' income. This may be due to inadequate training facilitators reported by small-holder cocoa farmers in Kwara State.

Table 6: Regression analysis of effects of farmer field school activities on yield and living standard of small-holder cocoa farmers in Kwara State, Nigeria

Variable	B	S.E.	t.	R^2	Adj.R^2	Sign
Yield	-393.721	1629.366	-1.424	0.13	.006	0.156
Income	-14129.345	614997.986	-.135	0.000	-.006	0.892
Expenditure	-3962.454	21060.864	1.109	0.008	.001	0.269

Source: Field Survey (2023)

CONCLUSION AND RECOMMENDATION

The study concluded that cocoa farmers in the study area were largely dominated by males than females. There is an increase in yield, income and expenditure after participating in FFS. Inadequate training facilitators were the major constraint faced by the cocoa farmers. The study also concludes that FFS had significant effects on yield, income and expenditure of smallholder cocoa farmers in Kwara State, Nigeria and based on the findings from this study, the study recommends more females should be involved in the FFS programme in Kwara State. The Government should recruit, train and retrain more facilitators to enable FFS to have significant effects on the yield and living standard of small-holder cocoa farmers in Kwara State. The Government through extension organisations should set up proper monitoring and evaluation processes to access facilitators in other to make FFS have significant effects on the yield and living standard of small-holder cocoa farmers.

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