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Factors Influencing Cooperative Members' Access to Extension Services on Root and Tuber Crops Production in South-East, Nigeria

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ABSTRACT

*The study assessed factors influencing cooperative members' access to extension services on root and tuber crops production in South-East, Nigeria. Multi-stage sampling method was used to select a total of 120 youths and women. Data were collected using a structured questionnaire. Both descriptive and inferential statistics were used for data analysis. The descriptive statistics used were frequency count, percentages and mean, while the inferential statistic used was Ordinary Least Square Regression Model (OLS). Result showed that average percentage (58.33%) of the cooperative members were females, the majority (73.33%) of the respondents were married. Good percentage (60.00%) of the cooperative members had farm size that fell between 0.1-1ha, and (61.67%) of them indicated that they had no access to extension services. The results showed that all (100%) of the farmers cultivated cassava. The grand mean was 3.27 on a five point rating scale, indicated that the cooperative members had constraints in accessing extension service delivery. The result of regression analysis revealed that some of the socioeconomic variables were significant at 1% and 5% levels with coefficient values of age (2.30**), sex (2.35**), education level (2.38**), household size (2.68**) and access to credit (7.80***) respectively. The study concluded that some socioeconomic factors influenced cooperative members' access to extension services on root and tuber crops production, namely sex, age, education, household size and access to credit. The major constraining factors to access to extension services were low extension farmer ratio, distance from farm to extension office, access to credit, insecurity, poor network of communication, cultural barriers among others. It is therefore, recommended that more extension agents be employed and deploy to various communities to enable them reach out to cooperative farmers in the area since low extension farmer ratio is the major constraint indicated by farmers in the study.*

INTRODUCTION

In Nigeria, agriculture is still the main stay of the economy as majority of the rural dwellers are into farming (National Bureau of Statistics (NBS), 2018). Food crops production is a necessary condition in reducing hunger and ensuring food security, especially to the poor rural dwellers that are vulnerable to misfortune. Nigeria's agriculture has high potentials for employment generation, food security, poverty reduction and industrialization. Accelerating hunger and poverty reductions require direct measures to help people who are poor and ill fed to escape poverty trap (FAO, 2016).

Agricultural extension services operate under the premise that improved agricultural productivity is largely dependent on rural farmers' acceptance of improved cultural and technological changes,

and that small scale farmers can only increase their farm yield by switching from their traditional practices to recommended scientific farming methods (Berthe, 2015). In practical terms, extension means giving farmers in developing countries knowledge of agronomic techniques and skills to improve their productivity, have food security and enhance livelihoods. In essence, agricultural extension is the transfer of appropriate technologies and production recommendations to the farmer, policy makers, private organizations and the general public. Extension informs, advises, teaches farmers about new improved research results and new agricultural techniques and brings feedback to research and input agencies (Nwakor *et al*., 2021).

Root and tuber crops, including cassava, sweetpotato, potato and yam are the most important food crops for direct human consumption in Africa. These four crops are grown in varied agro ecologies and production systems contributing to more than 240 million tons annually, covering around 23 million hectares (Nteranya and Adiel, 2015). The aggregate value of yam, cassava, potato and sweetpotato exceeds all other African staples, including cereal crops (cereals annually producing on average 169 million tons on 108 million ha of land). Root and tuber crops are staple food crops, being the source of daily carbohydrate intake for the large populace of the world. They provide substantial part of the world's food supply and an important source of animal feed and processed products for human consumption and industrial use (Chandrasekara and Kumar 2016). Root and tuber crops provide carbohydrates for more than 800 million people in Africa (FAO, 2017). There is dearth of information on factors influencing cooperative members' access to extension services on root and tuber crops production in the study area. Therefore, there is need to investigate factors influencing cooperative members access to extension services in root and tuber crops production to enable farmers in cooperative societies to produce enough food crops of root and tuber to meet the ever-growing population demands. Hence, the study to assess factors influencing cooperative members access to extension services on root and tuber crops production in South East, Nigeria. Specifically, the objectives were to describe the socioeconomic characteristics of the farmers; identify the root and tuber crops cultivated by the cooperative farmers; and examine constraints to cooperative members' access to extension services on root and tuber crops production in the study area. The hypothesis states that there is no significant relationship between selected farmers' socioeconomic characteristics and access to extension services.

METHODOLOGY

The study was carried out in South-East, Nigeria. The Zone is made up of five States, namely: Abia, Anambra, Ebonyi, Enugu and Imo States. It lies between latitude $5^0\,20^1$ and $7^0\,75^1$ North and longitude $6^0\,85^1$ and $8^0\,46^1$ East, and has a total land mass of 952,400 hectares. The Zone has over 16 million resident populations. By projection of 3% annual growth, it is estimated at 20.83 million (NBS, 2018). Multi-stage sampling method was used to select the study area and collect data from the respondents. Two States were randomly selected, they are Anambra and Abia States. Two Local Government Areas (LGAs) each from the States of Anambra and Abia were purposively selected for the First Stage. These were the LGAs of Awka North and Ayamelum in Anambra and Isiala Ngwa South and Umuahia South in Abia. This is because these locations have women and young farmer cooperatives that are cultivating root and tuber crops. From each of the LGAs, two cooperative societies were randomly selected, giving a total of eight cooperatives that cultivates root and tuber crops, for the Second Stage. In the Third Stage, 15 youths and women were randomly selected from each of the cooperative societies, giving a total sample size of 120 youths and women. Data were collected using a structured questionnaire. Both descriptive and inferential statistics were used for data analysis. The descriptive statistics used were frequency count, percentages and mean, A 5-point Likert type scale was used to assess factors influencing access to extension services. The scale was weighted as follows: Strongly disagree =1, Disagree =2, Undecided =3, Agree =4, Strongly agree =5. Thus 1+2+3+4+5=15/5 = 3. For the purposes of decision making, a mean score of less than or equal to 3.00 is regarded as not constraint while mean score greater than 3.00 is regarded as constraint to access to extension services. The inferential statistic used in data analysis

was Ordinary Least Square Regression Model (OLS). Model specified thus; the model is implicitly stated as;

$Y= (X_1, X_2, X_3, X_4, X_5, X_6 X_7 +u)$
Y = Access to extension services (no. of times visited by extension agents in a year)
X= Socioeconomic characteristics of the farmers
X_1= Sex (Male = 1, Female = 0)
X_2 = Age (years)
X_3 = Education level (number of years spent in school)
X_4 = Marital status (married = 1, Single = 0)
X_5 = Farm size (ha)
X_6= Access to extension (number of times)
X_7= Access to credit (yes =1, no=0)
U = Error term

RESULTS AND DISCUSSION

Socioeconomic Characteristics of the Cooperative Members

Results in Table 1 show that some (48.33 %) of the farmers were between 30-39years and 19.17% between 40-49 years. This implies that the cooperative members are in their active age. This is in agreement with the report of Mazza *et al*. (2017) that most farmers are within the active age and vibrant in agricultural production. It was also revealed that average percentage (58.33%) of the cooperative members were females while 41.67% were males. The result showed that greater number of the cooperative members were females. This finding is in agreement with Anyaegbunam *et al*. (2019) who reported that women were involved in farming activities than the male counterparts. The results also showed that majority (95.83%) of the cooperative members possess formal education. This is in agreement with Kainga *et al*. (2016) who observed that majority of the farmers in South East had one form of formal education or the other. Majority (73.33%) of the respondents were married. Married families are more engaged in agriculture than unmarried people in the area. This finding is in line with Emaziye (2015) who observed that most of the farmers were married and were engaged in farming. Good percentage (60.00%) of the cooperative members revealed that they had farm size that fell between 0.1-1ha, 39.17% had farm size that fell between 1.1-2ha, indicating that the cooperative members in the area were small scale farmers. Nwakor *et al*. (2016) observed that problem of land inheritance and fragmentation in the rural communities may be the cause of small farm size. Majority (74.17%) of the respondents indicated that they had no access to extension services. Finding supported Ekwe *et al*. (2017) that the low level of extension contact was due to the dwindling situation of extension services delivery in Nigeria. Also, the result shows that majority (80.00%) of the farmers had no access to credit while very few (20.00%) of them had access to credit. Having access to credit is very crucial for cooperative members to have access to extension services and in root and tuber crops production.

Table 1: Socioeconomic characteristics of the cooperative members (n=120)

Variables	Frequency	Percentages
Age (years)		
20-29	21	17.50
30-39	58	48.33
40-49	23	19.17
50 and above	18	15.00
Sex		
Male	50	41.67
Female	70	58.33
Marital status		
Married	88	73.33
Single	32	26.67
Education level		
Non formal	5	4.17
Primary	27	22.50
Secondary	68	56.66
Tertiary	20	16.67
Farm size (ha)		
0.1-1.0	72	60.00
1.1-2.0	47	39.17
2.1-3.0	1	0.83
Access to extension		
Always	9	7.50
Some times	22	18.33
Never	89	74.17
Access to credit		
Yes	24	20.00
No	96	80.00

Source: Field Survey, 2023

Root and Tuber Crops Cultivated by the Cooperative Society Members

Table 2 shows distribution of respondents according to the root and tuber crops cultivated by the cooperative members in the study areas. The results show that all (100%) of the respondents cultivated cassava. This shows that cassava is very important crop, as a food crop, it has some inherent characteristics which make it attractive, especially to the cooperative farmers. Some (46.67%) and (40.83%) of the respondents indicated that they cultivated yam and cocoyam respectively, while few (23.33%) and (18.33%) of them cultivated sweetpotato and ginger respectively. This shows that the cooperative societies are cultivating root and tuber crops. This finding agrees with Karya and Otsanjugu (2019), who reported that root and tuber crops have continued to play a significant role in agricultural production and revolution in Nigeria.

Table 2: Root and tuber crops cultivated by the cooperative society members (n= 120)

Crops	*Frequency	Percentages
Cassava	120	100.00
Yam	56	46.67
Sweet potato	28	23.33
Cocoyam	49	40.83
Ginger	22	18.33

Source: Field Survey, 2023 *Multiple responses recorded

Constraints to Cooperative Members' Access to Extension Services

Table 3 shows factors militating against access to extension services to the cooperative groups in the study area. The result showed that the major factor was low extension farmer ratio ($\bar{x} = 4.41$), followed by distance from farm to extension office ($\bar{x} = 3.67$), high cost of labour ($\bar{x} = 3.56$), access to credit ($\bar{x} = 3.36$), cultural barrier ($\bar{x} = 3.35$), inaccessible road ($\bar{x} = 3.30$), and poor communication ($\bar{x} = 3.14$). The result showed that transportation cost ($\bar{x} = 2.18$) and influence of local champion ($\bar{x} = 2.48$) were not perceived as factor that militated against their access to extension service delivery. The grand mean was 3.27, indicating that the cooperative members had constraints in accessing extension services.

Table 3: Constraints to cooperative members' access to extension services (n=120)

Perceived factors	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Total	$\bar{X}$	Decision
Distance from farm to extension office	50(250)	32(128)	2(6)	20(40)	16(16)	440	3.67	Constraint
Access to credit	35(175)	26(104)	19(57)	28(56)	12(12)	404	3.36	Constraint
Transportation cost	45(225)	36(144)	1(3)	32(64)	6(6)	262	2.18	Not constraint
Insecurity	44(220)	25(100)	6(18)	40(80)	5(5)	423	3.56	Constraint
Inaccessible road	38(190)	21(84)	3(9)	54(108)	5(5)	396	3.30	Constraint
Poor network of communication	16(80)	49(196)	12(36)	22(44)	21(21)	377	3.14	Constraint
Influence of local champions	14(70)	14(56)	9(27)	62(124)	21(21)	298	2.48	Not constraint
Cultural barrier	47(235)	10(40)	5(15)	55(110)	3(3)	403	3.35	Constraint
Low extension farmer ratio	60(300)	55(220)	1(3)	3(6)	1(1)	530	4.41	Constraint
Grand mean							3.27	

Source: Field Survey, 2023

Note: ≤ 3.00 Not constraint, > 3.00, Constraint. Bench mark mean score = 3.00.

Regression Analysis between the Socioeconomic Characteristics of Cooperative Members and Access to Extension Services

Table 4 shows the regression analysis of relationship between socioeconomic characteristics and access to extension services. Among the four functional forms, double log form was selected as the lead equation because of number of significant variables and fair conformity to *a priori* expectation. The R^2 value of 0.5006 implies that about 50.06% of the variation in root and tuber crops production was explained by independent variables. F-ratio of 16.0432*** was also highly significant at 1%, indicating goodness of fit.

Variables such as sex, age, education, household size, and access to credit were significant. The result reveals that sex was significant and negative at 5% level. This implies that the more female cooperative members, the more access to extension services on root and tuber crops production in South-East. This is in conformity with the report of Afuape *et al*. (2021) who stated that women were more involved in crop farming activities. Educational attainment was found to be significant at 5% level and is positive. This implies that increase the level of education will lead to corresponding increase in access to extension services on root and tuber crops production in South-East. Farmers possess formal education and this will boost their interest to have access to extension

services in crops they cultivate. This is in conformity with findings of Odoemelam (2019) who found that majority of the farmers in southern part of Nigeria had formal education. The result in Table 4 also reveals that access to credit was significant and positive at 1% level. This result shows that the more access to credit cooperative members have, the more they will have access to extension service. This finding corroborates with the finding of Ekenta *et al*. (2015) that a unit increase in income would cause a unit increase in accessing extension services or advisory services on root and tuber crops production. Also, farm size was significant and positive at 5% level. This implies that the more the farm size, the more the access to extension services on root and tuber crops production. This finding disagrees with Tokula *et al*. (2020) that increase in farm size, increases the involvement of the farmers in crop production.

Table 4: Regression analysis between the socioeconomics of cooperative members and access to extension services

Variables	Linear	Semi log	Exponential	Double log +
Cons	0.042	0.051	0.030	0.022
	(-2.42)**	(2.26)***	(2.62)***	(2.85)**
Age	0.832	0.533	0.452	0.015
	(0.21)	(0.63)	(0.75)	(2.30)**
Sex	0.047	0.088	0.141	0.021
	(2.01)**	(1.98)*	(1.48)	(2.35)**
Education level	0.238	0.163	0.023	0.019
	(1.19)	(1.40)	(2.31)**	(2.38)**
Marital status	0.695	0.891	0.377	0.550
	(0.39)	(0.14)	(0.89)	(0.60)
Household size	0.103	0.194	0.000	0.028
	(-1.64)	(1.31)	(5.97)***	(2.68)**
Access to extension	0.486	0.431	0.112	0.428
	(0.70)	(0.79)	(-1.60) *	(0.80)
Access to credit	0.000	0.000	0.902	0.000***
	(7.62)***	(5.90)***	(0.12)	(7.80)
R^2	0.4821	0.3508	0.3740	0.5006
R Adjusted	0.4498	0.3102	0.3349	0.4694
F statistic	14.9026***	8.6410***	9.5611***	16.0432***

Source: Field survey, 2023

Note: Figures in parenthesis represent t-ratios*** = at 1% and ** = at 5% significant levels, + = Lead Equation.

CONCLUSION AND RECOMMENDATION

The study concluded that number of socioeconomic factors influencing cooperative members' access to extension services on root and tuber crops production include sex, age, education, household size, and access to credit. Also, some of the constraining factors to access to extension services are low extension farmer ratio, distance from farm to extension office, access to credit, insecurity, poor network of communication, cultural barriers among others. It is therefore, recommended that more extension agents be employed and deploy to various communities to enable them reach out to cooperative farmers in the area since low extension farmer ratio is the major constraint indicated by farmers in the study.

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