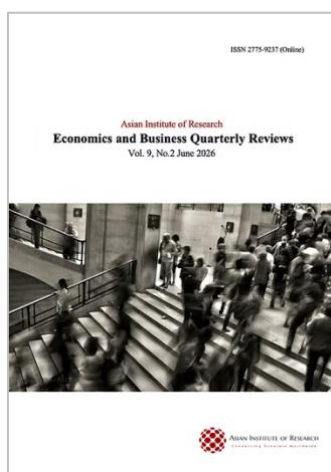




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Harnessing Collective Power: Federation of Agricultural Commodity Associations and the Economic Empowerment of Nigerian Farmers

Ehidihamhen Paul Omoyokan¹, Sule Magaji², Hassan Anthony Emmanuel³

¹ Department of Commodities and Export, Federal Ministry of Industry, Trade and Investment
Abuja, Nigeria. Email: chiobohpaul@yahoo.com

² Department of Economics, Yakubu Gowon University, Abuja, Nigeria.
Email: sule.magaji@uniabuja.edu.ng

³ Department of Economics, Yakubu Gowon University, Abuja, Nigeria.
Email: anthony.hassan@uniabuja.edu.ng

Abstract

This study was carried out to ascertain the impact of FACAN on the economic empowerment of its members. The study used structured questionnaire administered to 400 purposively and randomly selected FACAN members to collect data for the study in the six geopolitical zones of Nigeria, which was analysed using descriptive statistics and estimation of the specified model using logistic regression. The results of the study suggest that FACAN facilitates members' access to; improve input for increase in yield per hectare, extension services for technical assistance for increase in output, training and skills acquisition for capacity building, more access to domestic and international markets for increase in sale and income, thereby impacting positively on their economic empowerment. The study also revealed that membership of FACAN does not facilitate access to grants and loans and this is due to the stringent collateral requirements and conditions attached to available grants and loans. The study advocated the need for government to formulate appropriate policy to encourage stakeholders in the agricultural commodity sub-sector to participate in FACAN and other agricultural commodity cooperatives as it would have multiplier effects on productivity, economic empowerment of members and growth of Nigeria economy

Keywords: Collective Power, Farmers, Economic Empowerment, Nigeria

1. Introduction

The United Nations adopted the 2030 Agenda for Sustainable Development Goals in 2015 to ensure peace and prosperity for current and future generations worldwide. The United Nations noted that achieving goals 1 and 2, which are ending poverty and achieving zero hunger, were crucial for the success of the other 16 goals (Carlsen & Bruggemann, 2022). This assigns a critical role for agriculture to play in ensuring zero hunger and contributing to the eradication of poverty through the empowerment of stakeholders in the sector. In this regard, Agricultural cooperative societies have emerged to empower farmers and other stakeholders in the agricultural value chain. They seek to help improve the lives of millions of smallholder farmers. The United Nations Food and Agriculture Organisation (UNFAO), International Fund for Agricultural Development (IFAD) and World Food Programme

(WFP) acknowledge the model in which Agricultural cooperative societies are leveraged to promote economic empowerment.

Evidence shows that smallholder farmers who are members of agricultural cooperative societies are empowered by being part of a larger group (FAO, 2012). The International Labour Organisation (ILO) has also noted that cooperative societies are platforms for members to negotiate better terms in contract farming and lower prices for agricultural inputs like seeds, fertiliser and equipment, and offer prospects such as securing land rights and better markets that they would not be able to achieve individually (Schwettmann, 2011). Sifa (2014) found that in Africa, the primary reason for establishing agricultural cooperative societies is to enhance production. However, the study reveals that agricultural cooperatives have provided rural and smallholder farmers with the opportunity to access various services that they would not be able to obtain individually. These services range from improved access to markets, grants, credits, and support in terms of improved seedlings, access to information, extension services, better training, technologies, and innovations, among others.

A large number of poor Africans in rural areas depend on Agriculture for their livelihoods (Aluko & Magaji, 2020). Therefore, any intervention aimed at increasing productivity, promoting a sustainable agricultural sector, and enhancing profitability has a positive impact on them, assisting in their empowerment and poverty alleviation (Magaji, Musa, Abdulmalik, & Eke, 2022). The Agricultural sector has remained a strategic and critical sector for the sustainability of many countries' economies worldwide; Nigeria is no exception. Agricultural resources have been a significant contributor to Nigeria's economic growth. Prior to the oil boom in Nigeria, agriculture had been a strategic sector and remained significant despite the oil boom. It provides employment opportunities for over 70% of the population, reduces poverty and contributes to economic growth. (Oji-Okoro, 2011; Oyinbo & Rekwot, 2014).

Furthermore, agriculture was the mainstay of Nigeria's economy, providing the largest share of foreign exchange inflows into the country before the discovery and exploration of crude oil in Nigeria (Kamil, Sevin & Bekun, 2017). However, there had been little or no progress in the Agricultural sector as a result of poor investment in modern and improved farming technologies. This birthed the consensus about the importance and impact of collective action over and above individual action, and hence, encouraged and supported cooperative societies as essential critical tools for the development, improvement and sustainability of the agricultural sector in Nigeria. This is reflected in the establishment of agricultural promotion programmes, such as the Agricultural Development Programme (ADP) and River Basin and Rural Development Authorities (RBRDAs), which have not yielded the much-desired impact in the sector.

This may not be unrelated to issues such as poor remuneration of agricultural workers, low prices for agricultural products, low investment in the agricultural sector, non-mechanisation of production, high costs of inputs, and a near absence of extension services to bring farmers up to date with best practices for optimal productivity. It has become imperative to increase the return on farmers' productive economic activities, to improve their well-being and to empower them economically. These challenges have necessitated the formation of the Federation of Agricultural Commodity Associations of Nigeria (FACAN). It is a cooperative society established by the government for private sector stakeholders in the agricultural commodity value chains. Although the private sector drives FACAN, it reports to the government through the Commodities and Export Department of the Federal Ministry of Industry.

Trade and Investment. It is fully monitored and supported, both directly and indirectly, by the government to ensure it performs optimally. However, the impact of FACAN on stakeholders in the agricultural commodities sub-sector, particularly its members, concerning their empowerment or otherwise, needs to be assessed to determine whether its formation is making the desired positive impact in empowering these members. Thus, has FACAN addressed the issue of access to improved inputs by its members? Have extension services been made available to FACAN members? Do FACAN members have access to grants and loans for expanding their agricultural businesses? What about the capacity enhancement of FACAN members? Does FACAN assist members in accessing domestic and international markets for their products?. This is a unique study because FACAN, though a private sector owned and driven, is in partnership with the public sector.

To the best of the knowledge of this study, there is no literature as to whether stakeholders along various commodity value chains nationwide are empowered or not by being members of cooperative societies established on a public private partnership, particularly FACAN. Also, this study that is national in scope, FACAN members are stakeholders from all the States in Nigeria covering over Seventy-Nine (79) national commodity value chains, comprising farmers, aggregators, processors, marketers, exporters and promoters of agricultural commodities constitute the membership of FACAN. Whereas, existing studies focus mostly on specific cooperative societies or associations comprising members of a particular stage of the agricultural commodity value chain, such as farmers, processors, aggregators, or marketers. This paper is organised into five sections, the introduction being the first, followed by Section Two, which reviews the literature. The third section covers data and method, while the fourth section deals with estimation. The fifth section concludes the paper.

2. Review of Literature

According to Effiom (2014), the first documented activities of a cooperative society in human history were those of the Essenes at Qumran, located on the coast of the Dead Sea in the United Kingdom. Inhabitants of that coast were all free and jointly owned everything they had. He also revealed that cooperative societies significantly impacted the Industrial Revolution, as the organisation of cooperative societies by British and French workers helped to coordinate and motivate workers. He informed that the idea of establishing cooperative organisations in England was proposed and strengthened by Robert Owen in collaboration with others who had similar thoughts. The organisation began in Road Lane, Rochdale, a large town in Greater Manchester, England, at the foothills of the South Pennines in the dale on the River Roch, in 1844. They discussed ways to improve their working conditions and those of less privileged workers, such as artisans, consumers, traders, and farmers, who were often relegated to the background by the capitalist economic system in place during that period.

After the industrial revolution, the proponents of Rochdale principles which guided the early cooperative organization agreed on their ideologies and established operational guidelines as follows; first, membership to be open and voluntary, no gender restrictions of membership, no race or social status restrictions of membership, second, member have control over the organization through democratic means where every member have one vote; third, members must be politically and religiously neutral, the interest rate on capital must be minimal, dividends proportional to their purchases, fourth, regular education training of their members, fifth, they are autonomous and controlled by members, sixth, structures are put in place to ensure that they work together and strengthen the cooperation, seventh, concern for sustainable community development. The central values of Cooperatives are equality, democracy, equity, solidarity, self-help, self-responsibility, honesty, caring for others, openness, and social responsibility.

According to Gersch (2018), farmers' and producers' organisations exist in various forms. It could be cooperatives, producer associations, farmer/producer groups, communal land groups, unions, and federations. They enhance the production of farmers who work together and help them to achieve what they could not have achieved individually. Farmers' producers' organisations assist farmers in many ways, including collective production, post-harvest handling, quality control, access to markets, premium prices, building their capacity in business management, empowering them to engage in policy dialogue, and positioning them to improve food security and their income levels (Mwesigwa, 2018). Latynskiy & Berger (2016) found that Agricultural cooperatives also contribute to rural transformation by facilitating consultation between stakeholders, governments, Non-Governmental organisations and other partners. In Nigeria, before modern cooperatives were established.

These Indigenous cooperative organisations existed in the form of labour clubs, Indigenous and traditional farmers' societies, and contribution clubs, and they functioned at nearly all village and community levels. The colonial administration introduced cooperative societies in Nigeria between 1933 and 1934, when C. F. Strickland was appointed to conduct a feasibility study on the possibility of introducing cooperative organisations into Nigeria. He submitted a report in favour of establishing cooperative organisations in Nigeria (Effiom, 2014). The literature defines empowerment as a process of enabling or imparting power from one individual or group to another. For instance, while Chandler (1991) sees empowerment as when a person is empowered to enable the

person who could not act before, to be able to act, on the other hand, Bredeson (1989) posits that empowerment is a process of providing people with opportunities and resources needed to understand and impact the world.

Furthermore, Malhotra, Schuler, and Boender (2002) define empowerment as the enhancement of the assets and capabilities of individuals and groups to engage with those they could not previously engage with. They also see empowerment as the capability to influence and hold accountable the institutions that affect them. Malhotra et. al. (2002) reveal that the empowerment process has different components which differ depending on the orientation and agenda of the writer. They also found that one of the ways empowerment takes place is through a participatory development approach and the growth of civil society, which is similar to cooperatives and associations of individuals aiming to achieve the same objectives. According to Karubi (2006), economic empowerment refers to the capacity of women and men to recognise, participate in, and contribute to the growth of an economy, while also benefiting from it. Their participation and contribution are such that their dignity is respected, and they can negotiate a fairer distribution of the benefits of economic growth. In other words, economic empowerment epitomises the alteration of power relations throughout society, such that there is an increase in the well-being of its members, the community grows and develops, the individual is freed from servitude and has access to a larger opportunity to make choices, thereby enhancing capacities for self-reliance.

3. Materials and Methods

The study employed a descriptive research design to analyse the Federation of Agricultural Commodity Associations of Nigeria and the economic empowerment of its members. The study used primary data sourced through the administration of questionnaires. Both purposive non-random and random sampling techniques were utilised for this study. Purposive sampling was employed to ensure that the executive members of FACAN and the executive members of the National Commodity Associations that comprise FACAN were part of the sample. The choice of purposive sampling method was necessitated by the fact that the researcher is targeting respondents (executive members of FACAN) who will be able to provide relevant and appropriate data, bringing out the best information possible from the samples. Additionally, the respondents are readily available and close, making it convenient for the researcher.

The binary logistic regression model was employed to establish the relationship between the dependent and independent variables and to examine whether FACAN members are economically empowered or not. The binary logistic regression model was employed to achieve the study's objectives. This is because it helps to test the hypotheses when the dependent variable has a dichotomous nature. Pre-estimation and post-estimation tests were carried out to ensure that the results obtained were not spurious. The Cronbach's Alpha test was conducted to ensure the reliability of the data. Descriptive statistics, such as percentages, frequencies, and graphs, were employed for the analysis of the data. The International Business Machines Corp (IBM) Statistical Package for the Social Sciences (SPSS) was used for coding and data analysis. Personally administered structured questionnaires were employed to gather information from 400 (members of FACAN) respondents across the Six States, each from the Six Geopolitical Zones in Nigeria and the Federal Capital Territory, on demographic characteristics, the impact of the Federation of Agricultural Commodity Associations of Nigeria (FACAN) on the economic empowerment of its members.

Other data were collected from internal documents in the office of the Federation of Agricultural Commodity Associations of Nigeria, located in the Old Federal Secretariat, Area 1, Garki, Abuja, Nigeria. According to the leadership of FACAN members, the entire population of FACAN was 15,003,248 as of January 2023. However, the population for this study is (2,800,514) Two Million, Eight Hundred Thousand, Five Hundred and Fourteen members, it comprises FACAN members from the 6 Six States selected from the Six Geopolitical zones in Nigeria and the Federal Capital Territory (FCT). The Six States chosen for the study include Kogi, Taraba, Cross River, Kaduna, Imo, and Ogun States, representing the North-Central, North-East, South-South, North-West, South-East and South-West, respectively. The six States and FCT were chosen because the researcher could easily access respondents, collect appropriate data, and it was also convenient for the researcher.

The National Commodity Associations were selected because they represent the membership of FACAN and cut across stakeholders in the value chains of various agricultural commodities, including farmers, commodities aggregators, local buying agents, processors, marketers, exporters and promoters of commodities and are actively participating in economic activities in the commodity subsector in the selected Six States of Nigeria and the Federal Capital Territory (FCT). The population of this study is homogeneous because members of FACAN cut across various aspects of the agricultural value chains and are comprised of men, women, youths and the elderly involved in similar economic activities. Therefore, the sample size selected for this study was based on the fact that members of FACAN are residents of all the States in Nigeria and the Federal Capital Territory. Hence, Two Million Eight Hundred Thousand, Five Hundred and fourteen (2,800,514) members of FACAN across Nigeria represent the study population adequately.

The Yamane (1967) formula was employed to determine the sample size with a 95% confidence level as follows:

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = sample size

N = population

e = allowable error (%)

Substituting into the formula:

$$n = \frac{2,800,514}{1+2,800,514(0.05)^2}$$

$$n = 399.94$$

Thus, a sample size of approximately 400 respondents was determined. The study utilised both purposive and simple random sampling techniques. The sample size for each of the selected States is determined by proportionally sharing the entire sample size (400) among the States and the FCT, as shown in Table 3.2 below. The study applied the sample size determination formula (Israel, 1992) to determine the sample size from each geopolitical zone (State) and FCT. This formula was used by Didana (2019) in a study on the determinants of rural women's economic empowerment in agricultural activities: The case of Damot Gale Woreda, Wolaita Zone, SNNPRS, Ethiopia.

Table 1: Proportionate sampling design for administration of questionnaires

State	Population size	Formula	Calculation	Sample size
Kogi	398,426	$Ss = (Ps/Pas)*n$	$(398,426/2,800,514)*400$	56
Taraba	512,021	$Ss = (Ps/Pas)*n$	$(512,021/2,800,514)*400$	73
Cross River	405,204	$Ss = (Ps/Pas)*n$	$(405,204/2,800,514)*400$	58
Kaduna	586,892	$Ss = (Ps/Pas)*n$	$(586,892/2,800,514)*400$	84
Imo	284,010	$Ss = (Ps/Pas)*n$	$(284,010/2,800,514)*400$	41
Ogun	506,724	$Ss = (Ps/Pas)*n$	$(506,724/2,800,514)*400$	72
FCT	107,234	$Ss = (Ps/Pas)*n$	$(107,234/2,800,514)*400$	15
Total	2,800,514	$Ss = (Ps/Pas)*n$	$(2,800,514/2,800,514)*400$	400

Source: Author's Compilation (2023)

Questionnaires were administered to the respondents (members of FACAN) during their various official meetings, which they usually hold in their State offices and attend, with FACAN members from those States Present. Questionnaires were also administered to some respondents from the selected States when they attended workshops and seminars organised for stakeholders in their respective agricultural value chains. Some questionnaires were also administered during FACAN's regular meetings at the Federal Ministry of Industry,

Trade, and Investment in Abuja, Nigeria, as well as at the FACAN administrative office, located on the premises of the Federal Ministry of Industry, Trade, and Investment, Area 1, Garki, Abuja, Nigeria. At the time of administering the questionnaire, respondents were informed not to participate if they had already responded to the questions.

A *pre-test* of the questionnaire was conducted to ensure that the instrument captured the pertinent data needed for the analysis. This was to guarantee that the research questions were answered by information gathered from the questions in the questionnaire. The goal was to develop reliability and validity in the questionnaire to ensure that the data collected and the results are not spurious, and also ensure that appropriate data were extracted from the respondent. Cronbach's alpha was used to assess the reliability of the data. Nunnally (1978) observed that the minimum acceptable range for Cronbach's alpha, as reported by most studies, was 0.70. This aligns with Ndiyo (2005), who posited that question items are internally consistent with each other and considered reliable if the Cronbach's Alpha is 0.70 and above. However, other scholars (Sekaran, 1992; Slater, 1995) proposed that a reliability gauge should possess a minimum value of 0.60, which is suitable for testing the hypothesis.

The variable for economic empowerment in this study is dichotomous, measuring whether rural women are economically empowered through rural agricultural activities or not. That was the theoretical basis on which his study developed the model, with the economic empowerment of rural women as the dependent variable, assuming a value of one (1) for economic empowerment and zero (0) otherwise. The independent variables are both continuous and dummy. This study adapted the model of Adejo, Adejo, and Shaibu (2017), who examined the assessment of gender access to Agricultural loans from cooperative societies in the Dekina Local Government Area of Kogi State, Nigeria. The logistic regression model was used to estimate the determinants of loan acquisition in the cooperative societies. The logistic regression model explains the effect of the explanatory variables (income, household size, age, educational status, and years of membership) on the dependent variable (access to a loan by male or female cooperator).

In this study, we assessed the association between membership in FACAN and empowerment variables, which include an increase in income from agricultural commodities value chain activities, increased market access, access to loans and grants, contact with extension service agents, training and skills acquisition, and access to improved inputs. These variables can influence the dependent variable (empowerment of FACAN members, proxied by an increase in output and income, respectively). According to Salisu (2016), when dealing with Logistic regressions, the odds ratios, log odds, marginal effects, and conditional probability are the parameters that are usually estimated. He notes that the odds ratio is the ratio of the probability of $Y = 1$ to the probability that $Y = 0$. The log odds are obtained by taking the natural log of the odds ratio. He states that the marginal effect is of interest because it measures the change in the probability of $Y=1$ resulting from a unit change in a particular independent variable. Thus, this study specified the following models.

$$\ln \text{OPT} = \ln(\text{Pi}/1\text{Pi}) = \beta_0 + \beta_1 \text{MKTACCESS} + \beta_2 \text{LOAN} + \beta_3 \text{EXTEN} + \beta_4 \text{TRAINING} + \beta_5 \text{INPUT} + U_i \quad (1)$$

$$\ln Y = \ln(\text{Pi}/1-\text{Pi}) = \beta_0 + \beta_1 \text{MKTACCESS} + \beta_2 \text{LOAN} + \beta_3 \text{EXTEN} + \beta_4 \text{TRAINING} + \beta_5 \text{INPUT} + U_i \quad (2)$$

Where:

Output (OPT) and Income (Y) are proxies for the economic empowerment of FACAN Members and the dependent variable of the study (Otsupius & Kabuoh, 2015).

The explanatory variables for both equations are as follows:

MKTACCESS = Access to domestic and international markets

LOANS = Access to loans and grants

EXTEN = Access to extension services

TRAINING = Access to Training and Skill Acquisition

INPUT = Access to improved high-yielding inputs

The dependent variables are:

OPT = Increase in Output = a binary variable, with one if there is an increase in Output of a member of FACAN (economically empowered) and zero if there is no increase in Output of a member of FACAN (not economically empowered).

Similarly, Y = Income = a binary variable, with one if there is an increase in output of a member of FACAN (economically empowered) and zero if there is no increase (not economically empowered).

β_0 = Constant term

β_1 to β_5 = Coefficients of the independent variables

P = Probability of a member of FACAN being economically empowered

Ln = Natural Logarithm function

U_i = Error term

The a priori expectations are as follows:

$$\beta_0 > 0, \beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0.$$

4. Results and Discussion

Socio-Economic Characteristics of Respondents

The socioeconomic data, such as the education and occupational status of respondents, were collected. The data were analysed to understand the socio-economic standing of the respondents. The data is presented in Table 2 below.

Table 2: Distribution of Respondents based on Socio-Economic Characteristics

Variables	Number Of Respondents	Percentage
Formal Education	308	77
Primary	42	14
Secondary	118	38
Tertiary	148	48
Informal Education	92	23
Vocational	70	76
Job Training	17	19
Special Training	5	5
Occupation of Respondents		
Farmers	207	51
Processors	83	20
Marketers/Exporters	78	19
Others	42	10

Source: Authors' compilation

Table 2 presents the distribution of respondents by socioeconomic characteristics, specifically education and occupation. It shows that 308 respondents, representing 77% of the respondents, have formal education, and 92 respondents, representing 23% have informal education. The data indicate that most FACAN members have a formal education, which implies that they possess the educational capacity to understand and respond appropriately to the questionnaires. The data for respondents with formal education is presented in Table 4.2 above. It shows that 42 respondents, representing 14% of the total, have formal primary education, 118 respondents, representing

38%, have formal secondary education, and 148 respondents, representing 48%, have formal tertiary education. The data for respondents with informal education is presented in Table 4.2 above. It shows that 70 of the respondents, representing 76% of those with informal education, have vocational education.

Seventeen of them, representing 19%, have job training through informal education, and 5 of them, representing 5%, have special training. FACAN members with informal education have acquired the knowledge and skills that help them be more effective and efficient in carrying out their business, particularly economic activities along the agricultural commodity value chains. The data on the respondents' occupations are presented in Table 4.2 above. The data show that 207 respondents, representing 51% of the total, are farmers, 83 respondents, representing 20%, are processors, 78 respondents, representing 19%, are marketers, and 42 respondents, representing 10%, engage in other economic activities within the agricultural commodity value chains, including commodities aggregators and commodities promoters.

4.1. Reliability Test

The study assessed reliability before proceeding to the field, which was done via a pilot survey. Cronbach's Alpha was used. It is used to measure how much of the variability in the observed score represents variability in the underlying actual score. It is used to indicate the extent to which scores are consistent with one another and the extent to which the data are free from error. If the test shows low reliability, the instrument is adjudged as weak. Reliability indicates the internal consistency of multiple-item scales, and Cronbach's alpha coefficient is the most commonly used measure. The expectation is that alpha should be greater than 0.70, as the higher the alpha, the higher the reliability. However, when alpha is greater than 0.90, it could be an indication that the items are repeated or that there are more items in the scale than are necessary.

Table 3: Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	No of Items
	.882	.883	6
	.880	.881	6

Source: SPSS Output

The Cronbach's alpha statistic result from the pilot survey is shown in Table 4.17, which is approximately 0.88, indicating an acceptable level of internal consistency reliability for the instrument used in the study.

Table 4: Variables in Equation 3.6

		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Input	1.100	.545	4.075	1	.044	3.004	1.032	8.739
	Exten	2.557	.542	22.291	1	.000	12.903	4.463	37.307
	Loan	1.128	.812	1.930	1	.165	3.090	.629	15.181
	Traning	1.428	.616	5.371	1	.020	4.172	1.247	13.963
	MktAccess	3.681	.700	27.666	1	.000	39.695	10.069	156.485
	Constant	-3.577	.538	44.230	1	.000	.028		

Source: SPSS Output

The variables in equation (1) show the relationship between the predictors and the outcome. The B (Beta) is the predicted change in the log odds. This means that for a unit change in the predictor, there is an exponential change (Exp (B)) in the probability of the outcome. The concept of odds relates to the likelihood of one outcome over another; in other words, the ratio of the probability that a particular outcome (FACAN member is empowered) will occur, to the chance that another outcome (FACAN member is not empowered) occurs. The results in Table 4.32 above show that access to improved inputs, extension services, training, and skills acquisition, as well as access to more domestic and international markets, contributed significantly to the increase in output and, hence, the model.

When B is positive, it indicates that as the independent variable increases, there is a higher probability of having an increased output. Therefore, we say that for every one-unit improvement in input, there is a predicted increase of 1.100 in the Log odds of falling at a higher level of output.

Similarly, a unit improvement in access to extension services is predicted to result in a 2.557 increase in the Log odds of falling at a higher output. Additionally, a unit improvement in access to training and skills acquisition is predicted to result in a 1.428 increase in the Log odds of falling into a higher output category. The result suggests that a unit improvement in access to domestic and international markets is associated with a predicted increase of 3.681 in the Log odds of falling at a higher output. However, access to grants and loans is not statistically significant; therefore, it did not add significantly to the model.

The Exp (B) is the odds ratio reflecting the multiplicative change in the odds of being in a higher category on the dependent variable for a unit increase in the independent variable, when all the other independent variables are held constant. In other words, the odds represent the ratio of the probability of success to the probability of failure. The logarithm is introduced to ensure a normal distribution and to shrink the values of the odds that are extremely large, thereby making them log odds. The results of Exp (B) for the variables that are statistically significant in the model are access to improved inputs (0.044), access to extension services (0.000), access to training and skills acquisition (0.020), and access to domestic and international markets (0.000), are 3.004, 12.903, 4.172, and 39.695 respectively, the proportion increase of the odds caused by access to improved inputs is $(3.004 - 1)$ which is 2.004.

In percentage terms, a unit of access to improved input increases the odds of an increase in output by 2.004 times, which is equivalent to 200.4 per cent. Similarly, access to extension services increases the odds of an increase in outputs by $(12.903 - 1)$ or 11.903. In percentage terms, a unit increase in access to extension services increases the odds of an increase in outputs by 11.903×100 or 1,190.3 per cent. Additionally, the proportionate increase in odds caused by access to training and skills acquisition $(4.172 - 1)$ is 3.172. In percentage terms, a unit of access to training and skills acquisition increases the odds of an increase in output by 3.172 times, or 317.2%. The proportion increase in the odds caused by access to domestic and international markets $(39.695 - 1)$, which is 38.695, implies that a unit increase in access to domestic and international markets increases the odds of an increase in output by 38.695×100 per cent, or 3,869.5 per cent.

Table 5: Variables in Equation 2

		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	MktAccess	3.187	.485	43.188	1	.000	24.224	9.363	62.674
	Input	.460	.558	.679	1	.410	1.583	.530	4.726
	Traning	2.998	.622	23.248	1	.000	20.041	5.925	67.787
	Exten	1.333	.502	7.052	1	.008	3.794	1.418	10.151
	Loan	.555	.583	.907	1	.341	1.742	.556	5.455
	Constant	-4.278	.680	39.515	1	.000	.014		

Source: SPSS Output

The variables in Table 4.41 above show the relationship between the predictors and the outcome. The results show that access to extension services, training, and skills acquisition, as well as access to more domestic and international markets, are statistically significant contributors to the increase in income of FACAN members, and hence significantly added to the model. The results suggest that for a unit improvement in access to extension service, there is a predicted increase of 1.333 in the Log odds of falling at a higher income level. Additionally, a unit improvement in access to training and skills acquisition is predicted to result in a 2.998 increase in the Log odds of falling into a higher income level. The result further shows that a unit improvement in access to domestic and international markets is associated with a predicted increase of 3.187 in the Log odds of falling at a higher income level. However, access to grants and loans, as well as access to improved inputs, was not statistically significant and therefore did not significantly contribute to the model.

The results of Exp(B) for the variables that are statistically significant with less than 0.05 p-values in the model which are, access to extension services (0.008), access to training and skills acquisition (0.000), and access to domestic and international markets (0.000), are 3.794, 20.041, and 24.224 respectively, the proportion increase of the odds caused by access to access to extension services increases the odds of increase in income by (3.794-1) or 2.794. In percentage terms, a unit increase in access to extension services increases the odds of an increase in their income by (2.794x100) percent or 279.4 per cent. Also, the proportion increase of the odds caused by access to training and skills acquisition is (20.041- 1), or 19.041. In percentage terms, a unit of access to training and skills acquisition increases the odds of an income increase by 19.041 x 100 per cent, or 1904.1 per cent.

Also, the proportionate increase in the odds caused by access to domestic and international markets is 23.224, which is (24.224 - 1). In percentage terms, it implies that a unit increase in access to domestic and international markets increases the odds of an income increase by 2322.4 per cent. The **first null hypothesis** of the study, which states that there is no significant relationship between membership of FACAN and access to improved inputs, was tested using Table 4.32. The results (B1 = 1.100) indicate a positive relationship between membership in FACAN and access to improved inputs. Results also show a statistically significant level of 0.044 for improved input; this falls within the acceptable level of 0.05. Therefore, we can reject the null hypothesis that there is no significant relationship between membership in FACAN and access to improved inputs, leading to an increase in output. This indicates a significant relationship between membership in FACAN and access to improved inputs.

The **second null hypothesis** of the study which states that there is no significant relationship between membership of FACAN and access to extension services was tested using Table 4.32, which shows a statistically significant level of 0.000 for access to extension services which falls within the acceptable level of 0.005 and also has a positive influence on output as reflected by the odds ratio (B2 =2.557) therefore, we can reject the null hypothesis that there is no significant relationship between membership of FACAN and access to extension services for an increase in output. This suggests that membership in FACAN facilitates access to extension services. The **third null hypothesis** of the study, that there is no significant relationship between membership in FACAN and access to grants and loans for agricultural business expansion, was tested using Table 4.32, which shows a statistically significant level of 0.165 for access to grants and loans among FACAN members.

The result implies that it is not statistically significant at a 0.05 level of significance for the study. Therefore, we can accept the null hypothesis that there is no significant relationship between membership in FACAN and access to grants and loans for increased output. It suggests that being a member of FACAN does not give any advantage when accessing grants and loans for stakeholders in the agricultural commodities value chain. The **fourth hypothesis** was tested regarding FACAN members' access to training and skill acquisition, as shown in Table 4.32. A statistically significant level of 0.020 for access to training and skill acquisition by FACAN members falls within the 0.05 level of significance of the study. It is an indication that membership of FACAN impacts access to training and skills acquisition which in turn positively influence output as reflected by the odds ratio (B4 =1.428) thus, we can reject the fourth null hypothesis of the study, that there is no significant relationship between membership of FACAN and access to training and skills acquisition for increase in output and conclude that based on the results, membership of FACAN helps to access training and skill acquisition for capacity building of FACAN members.

The **fifth null hypothesis**, that there is no significant relationship between membership in FACAN and access to domestic and international markets, was tested using Table 4.32. The result revealed a statistically significant level of 0.000, which falls within the acceptable level of 0.05, and a positive influence on output, as reflected by the odds ratio (B5 = 3.681). Thus, we can reject the null hypothesis that there is no significant relationship between membership of FACAN and access to domestic and international markets. This indicates that membership in FACAN gives access to more domestic and international markets. The estimated results of the binary logistic regression analysis in Tables 2 and 3 indicate that membership in FACAN facilitates access to improved inputs compared to those prior to joining the association. This result suggests that FACAN being the umbrella body for all the National Commodity Associations in Nigeria leverages the platform to reach out and get various support, including the provision of improved high-yield and short-time fruiting seedlings and other planting materials from

government agencies such as the Ministry of Agriculture and Food Security, Raw Material Research and Development Council and other Local and International Development Partners.

The results also show that access to improved inputs contributed significantly to an increase in output, thereby empowering FACAN members. However, access to inputs is not a significant contributor to increased income for FACAN members, as further revealed by the results. This may be explained by the fact that not all the increase in output recorded by FACAN members is sold to earn more income. In other words, although the increase in outputs did not translate to increased incomes for FACAN members, it nonetheless made them better off and empowered them. The results of the study are consistent with the findings of the study by Attah, Mba, and Okeke (2018) on the prospects of cooperative society for sustainable agriculture among smallholder farmers in Benue State, which revealed that the primary reasons for joining cooperative societies were access to credit facilities and greater access to farm inputs.

The results of this study also correlate with the study by Emmanuel, Hajime, Matsumura, Mohamed, and Siddighi (2015), which examines the economic analysis of the role of farmer organisations in enhancing the income of smallholder potato farmers in Middle Guinea. The findings of their study showed that in Guinea, farmers' organisations are critical in facilitating farm production and income (when produce is sold) of smallholder farmers and that providing support to farmers' organisations in terms of farm input extension services and market access would facilitate the growth and development of smallholder farmers in Guinea. Similarly, the results indicate that membership in FACAN has facilitated access to extension services, and that access to these services has contributed significantly to the increase in output, thereby empowering FACAN members. These findings suggest that membership in FACAN provided greater access to extension services compared to before becoming a member.

This may have been achieved through collective action as an association, and a request was made to relevant government Ministries, Departments, and Agencies to provide extension services, offering technical support to FACAN members. This aim is to increase output, contribute to food security, and enhance non-oil exports, in line with the federal government's diversification drive. The result could also be due to FACAN's engagements with big players in the agricultural commodities sub-sector, which sometimes necessitate the signing of a Memorandum of Understanding (MoU), wherein partners are required to give technical support for FACAN members, including the provision of extension services and in return, FACAN will sell their produce to them at competitive market-driven prices. The results are similar to those of the study by Ekepu, Tirivanhu, and Nampala (2017), which suggests that in Uganda, farmers' associations are a significant form of collective action, and that gender and extension contacts are important factors influencing membership in these associations.

It articulated the need for improved access to extension services in Uganda. Likewise, the results of this study revealed that membership in FACAN facilitates access to extension services, which also helps to increase outputs. This revelation aligns with the findings of Abamagal (2017), who reported that income and savings were higher for agricultural cooperative participants compared to non-participants, partly due to access to good extension services. The study recommends that extension services continue to be an effective strategy for encouraging farmers to join cooperatives. Furthermore, the results of this study suggest that membership of FACAN did not impact access to grants and loans and that grants and loans did not significantly contribute to an increase in the output of FACAN members. Additionally, the grants and loans accessed by a few members of FACAN, which may not be directly attributable to their membership in FACAN, did not significantly contribute to their output and, by extension, their empowerment.

This result could be due to the limited and highly competitive grants available to stakeholders in the agricultural commodities subsector, which are primarily targeted at specific crops (commodities) with stringent requirements that must be met before accessing them. This makes it very difficult for many stakeholders in the sub-sector to benefit from them. Similarly, the high cost of money due to high interest rates for available loans, together with stringent conditions such as collateral, makes it difficult for stakeholders in the agricultural commodity sub-sector, including FACAN, to access loans for their members. There are cases where FACAN grants and loans to its members, but the funds are insufficient to be shared among all association members. Therefore, only those

members who meet the conditions that FACAN may establish have access to such grants and loans. This is to ensure that members who benefit from such loans repay them in line with the lender's terms and conditions.

This result is inconsistent with the findings by Akerele & Adekunmbi (2018), which show that cooperative members benefited from loans and that these loans were significant contributors to the increase in their businesses. The authors recommended facilitation to ensure quick access to loans. The inconsistency in the results may be due to differences in the structure of management and regulation. Unlike other agricultural cooperative societies, FACAN is not a regular cooperative society but a National Commodities Association, run by private sector members but regulated and monitored by the public sector, under a public-private partnership arrangement initiated by the government. The results of our study, as presented in Tables 4.32 and 4.41, also revealed that membership in FACAN facilitated access to training and skill acquisition, which significantly contributed to members' increased output and, by implication, their empowerment.

The analysis suggests that membership in FACAN facilitates access to training and skills acquisition, which is connected to the fact that FACAN can utilise its platforms to access various existing government training and skills acquisition programmes for stakeholders in the agricultural commodities sub-sectors, benefiting its members. Additionally, FACAN leverages its collective strength to negotiate training and skill acquisition programmes with major companies. FACAN has signed a Memorandum of Understanding to ensure that members acquire current knowledge of global best practices along the commodity value chains and deliver outputs that meet international quality and standards. The results of this study corroborate the findings of Thaker, Bhatt, and Trivedi (2020) on the impact of socioeconomic factors on women's empowerment, which show that training and skills acquisition contribute positively and significantly to women's empowerment.

It also aligns with the findings of a study (Didana, 2019), which suggests that training significantly contributes to women's economic empowerment. Additionally, a study by Sebhatu & Mekelle (2015) found that training was one of the most influential factors enhancing women's empowerment. The results of the study, as presented in Tables 4.32 and 4.41, further reveal that membership in FACAN provides access to both domestic and international markets, contributing to an increase in income and thereby empowering its members. The results suggest that membership in FACAN facilitates access to both domestic and international markets. This may be attributable to the fact that FACAN membership is drawn from stakeholders across the entire agricultural value chain, including farmers, aggregators, processors, marketers, exporters, and agricultural commodity promoters.

This composition facilitates linkages that promote transactions and sales at the domestic and international markets. The resultant impact of the presence of the various players in the stages of the agricultural commodity value chains in FACAN is that members of the association interact with each other and do business amongst themselves, thereby giving the farmers in FACAN the opportunity to sell their produce to ready buyers (aggregators, processors and marketers) and minimise wastage. The processors, marketers, and exporters can easily purchase from farmers, which helps them meet the demand from their business partners. This increase in economic activity among FACAN members facilitates more sales in both domestic and international markets, which in turn increases the income of FACAN members. The result of our study is similar to the findings of the study by (Habiyaemye, Mtimet, Ouma, & Obare, 2023) that cooperative membership of milk marketing channels helped to increase the probability and likelihood of selling their milk. It also supports findings by (Mhagama, Mmasa & Ismail, 2021) in their study to examine the marketing services for choice of market channels among Sesame smallholder farmers in Tanzania, that agricultural marketing cooperatives impact member positively.

5. Conclusion

The study was conducted to analyse the impact of the Federation of Agricultural Commodity Associations of Nigeria on the economic empowerment of its members and fill the knowledge gap therein. Based on the findings of the study, it concludes that the Federation of Agricultural Commodity Association of Nigeria facilitate members' access to; improve input for increase in yield per hectare, extension services for technical assistance for increase in output, training and skills acquisition for capacity building, more access to domestic and international

markets for increase in sale and income, thereby impacting positively on their economic empowerment. The study also revealed that membership in FACAN does not facilitate access to grants and loans, which may be due to the stringent collateral requirements and conditions attached to available grants and loans.

It is therefore in the best interest of the Nigerian agricultural commodity sub-sector, and by extension, the non-oil sector and the Nigerian economy, for the government to take practical and urgent steps to address the problem, enabling FACAN members and other stakeholders in the sub-sector to access grants and loans to expand their businesses. Overall, the study's findings underscore the need for the government to formulate an effective policy that encourages stakeholders in the agricultural commodity sub-sector to participate in FACAN and other agricultural commodity cooperatives, as this would have a multiplier effect on productivity, the economic empowerment of members, and economic growth in Nigeria. The government should increase its support by providing inputs for agricultural cultivation. The support should be channelled through cooperative societies and FACAN to encourage private sector stakeholders in the agricultural commodity sub-sector to form cooperative societies from existing ones.

The provision of improved, high-yielding, and short-time fruiting seedlings through FACAN will help the government overcome the problem of diversion of such support and ensure that only genuine farmers and stakeholders in the sector receive the inputs. The government should employ more extension service workers and initiate policies that provide FACAN members and other agricultural cooperatives with greater access to extension services. This will undoubtedly encourage more stakeholders to join FACAN and contribute to an increase in output, in line with the government's food security initiative. The government should introduce innovative financing instruments and measures to facilitate access to financial grants and loans for FACAN members and other stakeholders in the agricultural commodity subsector. The government should also make a deliberate effort to provide more grants and low-interest-rate loans, and remove stringent collateral requirements for accessing these grants and loans.

The study shows that being a member of FACAN helped to access training and skills acquisition for capacity building, which contributed to an increase in output. Therefore, the government should prioritise training and skills acquisition programmes for capacity building for stakeholders in the agricultural commodity sector. The training should be organised for FACAN members and other cooperative societies to ensure that it has an impact on the targeted and relevant groups. To enhance the access of FACAN members' products and other stakeholders in the agricultural commodities sub-sector to domestic and international markets, the government should implement measures to build their capacity in marketing strategies, export documentation, and procedures. This will enable them to increase their sales in the domestic markets and export more to the international markets.

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