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Socio-economic Determinants of Arable Crop Farmers' Participation in Formal Financial Services in Umuahia Agricultural Zone of Abia State, Nigeria

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Abstract
The study analyzed socio-economic determinants of arable crop farmers' participation in formal financial services in Umuahia Agricultural Zone of Abia State, Nigeria. Specifically, the study identified formal financial services in relation to the farmers' participation; estimated the determinants of farmers' participation in formal financial services and examined the constraints to participation in formal financial services by the farmers. A multi-stage sampling procedure was used in the selection of 80 respondents for the study. Data were obtained from primary source through structured questionnaires administered to the arable crop farmers. Data were analyzed using descriptive statistics such as frequency counts, mean scores, percentages and multiple regression analysis. Age (1.0%), household size (1.0%), and education (1.0%) positively affect crop farmer's participation in formal financial services while farm proximity to formal financial institution (1.0%) had negative relationship with arable crops farmer's probability of participating in formal financial services in the study area. Majority of the farmers were constrained by distance to formal financial institutions ($\bar{X}$ = 3.53). The study recommends improvement on farmers' financial literacy through extension agents' trainings since education is related to access to formal financial services.

Keywords: Determinants, Arable Crop Farmers, Formal Financial Services, Accessibility

Introduction

Agricultural credit financing has been identified as a means of transforming the agricultural sector and revamping the Nigerian economy
Afolabi, *et al.,* (2021) and Ezu, (2023). However, smallholder farmers who constitute large proportion of agricultural production in Nigeria; who produce more than 85% of domestic food supply find it difficult to participate in formal financial services despite the provision of financial aids by the government Asuquo and Eyo (2023). These farmers have continually used poor or crude agricultural inputs due to inadequate capital to finance their daily farming activities. This has resulted to low production and development of the agricultural sector in Nigeria (Opeyemi, *et al*., 2021).
Farmers' financial participation involves more than having improved access to credit but covers enhanced access to savings and risk mitigation products, a well-functioning financial infrastructure that allows

individuals and farming businesses to engage more actively in the economy, while protecting users' rights. Widening access to financial services through digital payments, household savings, access to credit enable capital for investment, expand the class of entrepreneurs, and enable farmers to invest in themselves, their families, and their farming businesses (World Bank Group, 2025).

Despite the recent financial sector shift in Nigeria, many individuals and firms are still excluded from access to formal financial services such as a bank account, credit, insurance, savings, efficient means of receiving social benefit payments through registered financial institutions. Analysis of the access and usage of financial services by adults and enterprises show that African countries are behind in this aspect (AFDB, 2013). Abdullahi, *et al*., 2024 reported that 37% of rural Nigerians are financially excluded compared to 17% of urban Nigerians. Enebeli-Uzor and Mukhtar, (2023) also reported in 2021 that 55 percent of the population of adults in Nigeria were unbanked, which created gaps in financial access for typically excluded and underserved adults, especially the vulnerable groups such as the women, the poor, the less educated, the rural dwellers, the young, and those outside the labour force. According to Obisesan and Adeyonu (2018), the vast majority of those who are fully excluded from formal financial services live in rural areas where agriculture is the predominant occupation.

The low participation in formal credit is of two sides; some reasons may endure on farmers relating to demand, low education, low resource endowment, and societal norms, while some may lay on the supply-side, such as the sense that lending to farming is unsafe (Weber, 2012). When the supply of formal credit is not adequate, the informal credit markets emerge and dominate to serve underserved farmers. Supply side barriers refer to factors that relate to institutional frameworks, government policy and physical barriers. The supply side barriers are also recognized as external factors with regards to the general environment of access to financial services. The result of supply side constraints is involuntary financial exclusion (Nuru and Adamu, 2024), whereas demand side barriers refer to individual or household perceptions and decisions for use of financial services. They relate to price, income, financial literacy, and other socio-economic and cultural factors. The demand side obstacles to financial services such as high cost, low financial literacy, inadequate collateral can lead to involuntary exclusion among farmers (Yakubu, *et al*., 2017).

However, access to credit, payment services and insurance products are essentials to rural populations especially the farmers. Formal financial services provide farmers with access to loans, enabling them to purchase seeds, fertilizers, machinery, and other essential inputs. This boosts agricultural productivity and allows for expansion of farm operations, offer insurance products that help farmers hedge against risks such as crop failure, livestock loss, or adverse weather events (Asuquo & Eyo, 2023).
Access to formal financial services in Umuahia, Abia State seems no too sure especially among smallholder farmers and entrepreneurs**.** Arable crop farmers still face barriers to accessing loans and other financial products, with only a minority able to benefit from available services. It is against these backdrop that the study sought to analyze socio-economic determinants of arable crop farmers' participation in formal financial services in Umuahia Agricultural Zone of Abia State, Nigeria. The broad objective of the study was to analyzed the socio-economic determinants of arable crop farmers' participation in formal financial services in Umuahia Agricultural Zone of Abia State, Nigeria. The specific objectives were to:

i. identify the formal financial services in relation to the farmers' participation in study area;
ii. estimate the determinants of farmers' participation in formal financial services in the study area; and
iii. examine the constraints to participation in formal financial services by the farmers in the study.

Methodology

This study was carried out in Umuahia Agricultural Zone of Abia State, Nigeria. The Zone comprises Umuahia North, Umuahia South, Ikwuano, Isiala Ngwa North and Isiala Ngwa South Local Government Areas. The estimated current metro area population of Umuahia in 2024 was **947,000**, an **increase** of **4.76%** from 2023 Umuahia Nigeria Population (UNP, 2025).

Umuahia is located within latitude 7°29′ N of the equator and longitude 5° 32′ E of the Greenwich Meridian. The study area is characterized by fertile soil and the minimum and maximum temperatures of Umuahia are 20°C and 32°C respectively and its annual rainfall lies between 1700mm and 2000mm. The vegetation is of tropical rainforest type with trees and animals of diverse species. Economic trees found in the area include; Oil palms, Coconuts, Oil Bean trees, Kola, Citrus Spp, and Cocoa. Major food crops cultivated in this area include yam, cassava, cocoyam, potatoes, maize, melon, pepper, okra, rice, plantain and other vegetable crops.

Sampling Technique

Multi-stage sampling procedure was used in selecting eighty (80) arable crop farmers for the study. In first stage, Umuahia North and Umuahia South Local Government Areas were purposively selected due to the presence of large number of arable crop farmers and formal financial institutions. In the second stage, two (2) autonomous communities; Ndume and Isieke (Umuahia North) and Olokoro and Ubakala (Umuahia South) were randomly selected from each of the two Local Government Areas. This gave a total of four (4) communities or the study. In the third stage, two (2) villages were random selected from the list of villages in the selected communities, making it a total of eight (8) villages Ofeke, Umuhute, Ihie Isieke, Ukome Isieke Ibeku, Amizi Olokoro, Okwu Olokoro, Amuzu Ubakala and Mgbarakuma. In the final stage, ten (10) arable crop farmers were randomly selected from the eight (8) selected villages from the list of arable farmers from State Ministry of Agriculture. Enumerators assisted in data collection which gave a total of eighty (80) arable crop farmers were sampled.

Method of Data Collection

Data for the study were obtained from primary source through the use of structured questionnaire that were distributed to the arable crop farmers in the study area.

Data Analysis

Objective i was realized using descriptive statistics such as mean, frequency and percentage. Objective ii was achieved using multiple regression model and Objective four (iii) was achieved using 4-point Likert scale.

Model specification

Multiple regression model

The multiple regression model is specified implicitly thus:

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12})$

β_1 to β_{12}= Regression coefficients

$$Y = \frac{No\ of\ financial\ services\ used\ by\ the\ respondent}{Total\ no\ of\ the\ available\ (outlined\ )services} \quad \text{- - -1}$$

X_1 = Age of the farmer (Years)
X_2 = Sex (Male = 1, Female = 0)
X_3 = Farming Experience (Years)
X_4 = Household size (Number of persons)
X_5 = Level of education (years)
X_6 = Farm size (Hectare)
X_7 = Proximity to formal financial institution (Yes =1, No =0)
X_8 = Annual farm income (Naira)
X_9 = Cooperative membership (Yes =1, No =0)
X_{10} = Cost of credit (Naira)
X_{11} = Presence of financial institution (Yes =1, No =0)
X_{12} = Non-farm income (Naira)
β_0 = Intercept
$\beta_1 - \beta_{12}$ = Regression coefficients

et_i = error term

Objective iii was realized using 4-point Likert scale. It involves assigning numbers such as 4, 3, 2, and 1 to responses in form of Strongly Agree, Agree, Disagree, Strongly Disagree respectively. The average score was used as the decision rule. Any response that scored above the average was accepted and below was rejected. The average score 2.5 was specified as:

Average score $=\frac{4+3+2+1}{4} = 2.5$ - - - 2

Results and Discussion

Formal financial services in relation to the farmers' participation in study area

Formal financial services in relation to the farmers' participation in the study area were presented in Table 1.

The most common service obtained by the respondents from formal financial institutions in the study area was bank account ownership for the farm (87.50%). More so, withdrawal of deposits (86.25%), savings mobilization/deposit (86.25%) and electronic transfer (68.75%) ranked 2nd, 3rd, and 4th respectively. This result confirmed the availability of some of the formal financial institution's services to arable crop farmers in the study area. The result is in agreement with Okoroji, Nalwoga and Bwanika (2022) who reported that formal financial institutions in Anambra state, Nigeria provides micro saving services, remittances services, promote saving culture, loan, credit mobilization, micro insurance, transaction payment among others to the farmers.

Table 1: The formal financial services in relation to the farmers' participation in study area

Variables	Frequency*	Percentage	Rank
Bank account ownership	70	87.50	1st
Withdrawal of deposits	69	86.25	2nd
Savings mobilization/deposit	67	83.75	3rd
Electronic transfer	55	68.75	4th
Provision of agricultural credit/lending services	40	50.00	5th
Insurance services	18	22.50	6th
Bank overdraft	10	12.50	7th

Source: Field survey, 2022; Note: asterisks (*) indicates multiple responses recorded.

Determinants of farmers' participation in formal financial services

The determinants of farmers' participation in formal financial services in the study area is presented in Table 2 Four functional forms of the model (linear, exponential, semi-log and double-log) were fitted. The lead equation Semi log was chosen based on the number of criteria such as the coefficient of multiple determination (R^2), signs of the regression coefficient as they confirm to a priori expectation as well as the significance of the F-ratio and number of significant variables. The F-ratio was statistically significant at 1% indicating high goodness of fit of the regression line while R^2 of 0.604, implying that 60.40% of total variation in arable crop farmer's participation in formal financial services was accounted for by changes in the independent variables included in the model.

The coefficient (0.318) of age was positive at 1.00 significant level, implying that older arable crop farmers participated in formal financial services in the study area than the young ones. This means that, as the age of the farmers increases by one year, keeping other variables constant, the probability of participating in formal financial services increases by32%. This can be due to the fact that as the age of the farmers increases, they become more and more experienced and aware of available formal financial institution's services, as well, older farmers build more social acceptance while they living in the village for more year and they can easily form social groups in order to access formal financial institution's services. This is consistent with the finding of Samuel (2020) who reported that age had a positive relationship with the level of participation of farmers in formal financial institutions in a related study.

Household size had a positive coefficient (0.111) at 1.00 significant level indicating that a farmer with more family members have higher probability of participating in formal financial services than farmers with less family members. This means that, if the number of family members of a farmer increases by one unit, keeping other variables constant, the probability of participating in formal financial services rises by 11%. According to Siaw, *et al.,* (2023), increase in the number of persons gainfully employed in the household, whether they owned their farmland, increased their probability of being financially included. Farmers with higher level of output and profit would be considered by formal financial institutions for their credit Khan and Surisetti (2021**).** This finding is similar to the work of Masaood and Keshav (2020) who reported a positive relationship between household size and level of participation in formal financial institution's services.

The coefficient (0.010) of level of education was positive and statistically significant at 10.00 level, indicating that a farmer with higher level of education have higher probability of participating in formal financial services than farmers without education. This means that, if the educational level of the farmers increases by one unit, the probability of participating in formal financial services rises by 0.01%. This might be due to the fact that education enables farmers to read and write hence understand benefit of using formal financial services and also are able to follow the procedures of the financial institution carefully to access the service. This finding is in tandem with Dadson, Ugwuja and Attah (2020) reported that educational status was positively and significantly associated with financial inclusion among farmers in Rivers State.

The coefficient (-0.920) of proximity to formal financial institution was negative and significant at 1%. This means that, if the distance to formal financial institution increases by one unit, keeping other variables constant, the probability of participating in formal financial services will by -0.920%. The result indicates that if the distance between farmer's residence and the location of the formal financial institution is too far the less likely he participates in formal financial services due to high transportation cost in the study area. This may be attributed to the fact that they would incur higher transportation costs to the institution. According to Nnamani*, et al*., (2024), farmers find it easier to access financial services from formal institutions in their proximity to their location.

Table 2: Semi-log regression estimates of the determinants of farmers' participation in formal financial services in the study area

Variables	Coefficients	Std. Error	P-value
Intercept	0.820 (10.08)***	0.81	.000
Age	0.318 (4.11)***	0.77	.000
Sex	3.42e-08 (0.08)	42.700	.688
Farming experience	0.705 (0.01)	0.49.888	.800
Household size	0.111 (7.12)***	0.015	.000
Level of education	0.010 (4.30)***	0.002	.000
Farm size	-0.108 (1.79)	0.14	.000
Proximity to financial institution	-0.920 (7.30)***	3.061	.969
Annual farm income	0.003 (0.09)	0.001	.860
Cooperative membership	0.001 (0.33)	0.000	.063
Cost of credit	0.34e-06 (0.69)	0.024	.704
Presence of financial institutions	-0.060 (-0.38)	0.160	.696
Non-farm income	0.001 (0.79)	0.359	.553
R^2	**0.604**		
R-adjusted	**0.603**		
F-ratio	**146.56*** **		

Source: Field survey data, 2022. Figures in parenthesis are the t-ratio***Significant at 1%.

Constraints to farmers' participation in formal financial services

The constraints to farmers' participation in formal financial services in the study area were presented in Table 3

Majority of the farmers were constrained from participation in formal financial services by distance to formal financial institutions ($\bar{X}$ = 3.53). Other constraints encountered by the farmers include; cash sales of farm produce ($\bar{X}$ = 3.50), lack of awareness on available of formal financial services ($\bar{X}$ = 3.35), late approval of credit ($\bar{X}$ = 3.28). Other constraints that might hinder farmer's participation in formal financial services include; inability to read and write for proper documentations ($\bar{X}$ = 3.09), lack of formal financial institution's requirements ($\bar{X}$ = 3.04) and high interest charged on credits ($\bar{X}$ = 3.08).

This implies that farmers who live far from financial institutions are less likely to access financial services following time and high cost of transportation involved. This finding is in tandem with Nnamani*, et al*., 2024 and Okoroji *et al.,* (2022) as they reported that distance was a major challenge to accessibility of formal financial institution's services in Ebonyi and Anambra States, Nigeria.

Table 3: The constraints to farmers' participation in formal financial services

Variable	Total	Mean	Decision
Distance to formal financial institutions	282	3.53	Accepted
Inability to read and write for proper documentation	247	3.09	Accepted
Lack of formal financial institutions requirements	243	3.04	Accepted
Lack of awareness available of formal financial services	268	3.35	Accepted
High interest charges on loans given by formal financial services	246	3.08	Accepted
Cash sales of farm produce	280	3.50	Accepted
Late approval of credit	262	3.28	Accepted
Grand Mean		**3.27**	Accepted

Source: Field Survey, 2022. SD=Strongly agree, A=Agree, D=Disagree and SD=Strongly disagree. Critical mean score = 2.50. Decision rule: Mean ≥ 2.50 = Accepted while Mean < 2.50 = Rejected.

Conclusion

Based on the findings of the study, it's concluded that arable farmers participated in bank account ownership for the farm, withdrawal of deposits, savings mobilization/deposit and electronic transfer age of the respondents, household size and level of education and proximity to financial institution were factors that affected farmer's participation in formal financial services in the study area. Majority of the farmers were constrained from participation in formal financial services by distance to formal financial institutions. Other constraints encountered by the farmers include; cash sales of farm produce, lack of awareness on available of formal financial services, late approval of credit.

Recommendations

Based on the findings, the following recommendations are made that;

1. Central Bank of Nigeria (CBN) as well as the government should ensure decentralization of financial institutions particularly microfinance banks in the rural areas within the reach of arable crop farmers to ensure their wider access and usage of formal financial services; this would reduce burden of high transport cost and long queues in banks.
2. It is crucial to improve farmers' financial literacy consistently by the financial institutions through trainings by extension agents. This can also serve as source of awareness on the availability of formal financial facilities. Benefits of saving in banks should be emphasized among the conservative farmers.

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