



## Assessing Barriers and Sources of Adaptation Finance in the Context of Climate Change

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### Abstract

This study examined barriers and sources of climate adaptation finance among crop farmers in Delta State Nigeria. Multistage sampling technique was used to select 112 farmers from 15 communities in Delta State. Primary data were collected through questionnaires and subjected to descriptive and inferential statistics. The farmers mean age was 43 years with 63.4% being female and 64.0% married. About 74.1% of respondents learned with 9 years' average farming experience with mean income of ₦73067.23. About 78.6% of farmers were aware of credit sources and obtained an average of ₦95329.02 credit. The major reasons for adaptation financing were soil conservation, making buffers, adopting sustainable farm produce, planting trees, buying improved seedlings, and hiring additional labour. The foremost credit sources were informal money lenders, cooperative societies, personal savings, and friends/relatives. The dynamics that influenced credit accessibility were respondent gender, age, educational level, farming experience, income, marital status, cooperative membership, and awareness of credit sources. The major challenges to adaptation finance include zero collateral, a short period of repayment, delay in credit disbursement, high-interest rates, and secret charges. Access to credit helps farmers positively to adapt to climate variation, hence ensures food security. Credit sources should be invigorated to finance climate adaptation measures to ensure farmers' participation.

#### Keywords:

Barriers, Adaptation finance, Climate crisis, Crop farmers, Sources of Adaptation finance, Credit accessibility

### 1. Introduction

Climate emergency adaptation, using measures that can respond to associated impacts, is a vital issue in building a climate policy framework for the future (Ikpoza et al., 2022). The topic is therefore receiving increased attention in the global climate emergency debate. Farmers have always found ways to adapt to the consequences of changing weather and climate conditions. Climate and environmental alteration universally conversely stimulate the farmers need to improve and practice resilient strategies (Adeagbo et al., 2021). Furthermore, only a few institutions dealing with climate adaptation variation have been established to date (Gbigbi, 2017). Likewise, Pörtner et al. (2022) indicate that access to finance has a good impact on adaptation measures for climate breakdown. Climate emergency refers to the expected substantial change in global climate patterns brought about by human-induced increases in greenhouse gas emissions (Nwofoke & Bargissa, 2024). There is already considerable evidence that global climate is changing and projections put forward that the rate of change will rise (Ohwo et al., 2020). In a similar vein, Olajumake (2021) projected that crop yield in Nigeria may fall by 10-20% by 2050 due to climate emergency because the nation's agricultural system is predominantly rain-fed which fundamentally hinges on the vagaries of weather. The climate emergency is anticipated to cause lots of economic effects globally. It influences the availability and quality of water resources, puts pressure on the natural ecosystems of the planet and especially in the coastal areas, and brings changes to agriculture. Adaptation steps, however, have cost implications for farmers because of weak financial base according to Gbigbi & Ikechukwuka (2020).

Finance has a pivotal role to play in supporting developing countries' efforts to reduce emissions, de-carbonize their economies, and adapt to the impacts of climate emergency (Gbigbi, 2017). Climate finance signifies any public and private funding that supports actions identified in the National Climate Emergency Policy. Adaptation

financial flows are investments that help reduce the susceptibility of people and goods to effects of climate catastrophe (Balana & Oyeyemi, 2022). However, it is unclear if funding is indeed getting to the most susceptible. Scientific literatures on adaptation exist that deal with impact, vulnerability and challenges to adaptation (Ikpoza et al., 2022; Gbigbi & Ikechukwuka, 2020), but only little is known about financing and climate emergency. This study focused on two fundamental avenues of financing climate emergency adaptation: public financing and private financing. Despite the outcry of climate emergency effects and climate-related disasters, inadequate funding, however, is utterly impeding adaptation efforts across the globe (Gbigbi, 2017). Therefore, increasing awareness among farmers on climate finance is required to change perspectives in understanding the ever-changing risks linked with climate emergency, overcoming potential challenges in adaptation, and effectively managing the shifting risk profiles under climate emergency.

Financial resources provide the basis for fundamental strategies to expanding and reinforcing risk mitigating instruments, particularly with the increasing danger of climate emergency. The exact function of credit assess in addressing effect of climate shocks on climate emergency adaptation strategies, however, is not well understood. For developing countries to survive climate emergency, they must have financial resources; how those resources when allocated will determine, in part, how effective adaptation strategies are. Credit performs is crucial in promoting economic development. So it is necessary to assess credit performance on sustainable agricultural production through accelerated financing for adaptation measures for climate emergency. Bulk of literature focuses on climate emergency and agricultural production (Ojo & Baiyegunhi, 2020; Ikpoza et al., 2022, Nwofoke & Bargissa 2024). Akinwale & Kyari (2022) opined that credit challenges significantly reduce farm investment, minimize agricultural output, and further argued that reducing credit market imperfections will reduce environmental degradation by reducing credit challenges.

Observation has shown that financial sector development is beneficial in choosing sustainable adaptation strategies and environmental protection efforts in South-west Nigeria (Adeagbo et al., 2021), evidences from Nigeria (Balana & Oyeyemi 2022) and in Ethiopia (Nwofoke & Bargissa 2024). However, studies on finance and adaptation schemes in Delta State before now are lacking. Equally, there is little knowledge of current sources of funds on climate emergency adaptation measures; with little regard to the socioeconomic aspects. The broad objective was to look at the sources and challenges of adaptation finance among crop farmers. Specifically, the authors describe the socioeconomic physiognomies of respondents, identify the reasons for adaptation finance for the climate emergency, identify sources of adaptation finance for the climate emergency, estimate the factors influencing access to adaptation finance and identify challenges of adaptation finance for the climate emergency.

## 2. Materials and Methods

### 2.1 Research Design

The study was piloted in Delta State, Nigeria. A multistage selection was adopted for this investigation. Firstly, three Local Government Areas (LGAs) namely, Okpe, Isoko North, and Aniocha North were selected purposively due to climate emergency signals and farming activities. Secondly, 15 communities were randomly selected from the LGAs. Thirdly, 8 crop farmers were randomly picked from each community to give 120 crop farmers, however, due to lack of sufficient information 112 farmers were chosen for analysis. Raw data were obtained by well-structured questionnaire and subjected to descriptive and inferential statistics.

### 2.2 Model Specification

$$\text{Linear Regression } Y_i^* = \beta' x_i + \epsilon_i \dots \dots \dots (1)$$

The linear regression is specified as follows:

$$Y = a + AOF + HHS + EDU + FEXP + FAMS + OFFINC + GEND + COOP + MASTA + e \quad (2)$$

Where,

Y = volume of credit accessed (₦); AOF= age of farmers (years); HHS= household size (number); EDU = education level (number of schooling years); FEXP= farming experience (years); FAMS= farm size (hectares); OFFINC= off-farm income (Naira);

GEND= gender (1 = male, 0 = female); COOP = cooperative society (1 = member, 0 = non-member); MASTA= marital status (1 = married, 0 = single).

The formulated hypotheses were analyzed using chi-square test.

## 3. Results and Discussion

### 3.1 Socioeconomic Attributes of Farmers

Age distribution (Table 1) revealed that most (37.5%) farmers age range 41 - 50 years. This means that farmers were young, still active age as they tend to be more adventurous and flexible in decision making and willing to adopt innovations readily. According to Gbigbi (2017) younger farmers tend to be adventurous and flexible in deciding to adopt new ideas more readily. Age influenced farmers' choice to avert risk through financing, adoption of upgraded farming technologies, and other production-related decisions. It influences cultural factors like religion, politics, social factors, and education. Incorporating gender into agricultural activities can encourage the

formulation of gender-based innovations and technological development which can enhance agricultural productivity. Most (63.4%) farmers were female. This confirms the assertion of Joseph et al., (2020) that gender is no hindrance to committed participation in crop production if finance is made available. About 54.5% cultivate between 1.1 and 3.0 hectares each with mean plot size of 1.9 hectares inferring that they were subsistence farmers, a situation that may not allow participation in large production to guarantee access to bigger credit facilities for financing adaptation measures. Bulk (69.6%) of farmers had family size of 4-6 people (Table 1). This shows the presence of large household which is considered important to provide family labour thereby eliminating cost of hiring external labour for financing climate emergency. This finding is congruent with Gbigbi and Osun (2014) and Oyibo & Odebode (2024).

About 37.5% have spent between 6 -10 years as cooperative members (Table 1). The number of years spent as members of clubs, associations, or cooperatives could avail farmers' prospect to obtain credit, receive inputs and obtain information on important and recent information concerning farming activities in financing climate emergency adaptation (Ohwo, 2016). Most (47.3%) farmers' earned ₦50,001-N100,000 per annum. Hence, farmers may be denied credit facilities for reason that accessibility to fund is enhanced by high income and earning capacity. About 33.0% of farmers had 9-11 years' experience (Table 1), thus, farmers have reasonable experience and therefore might have better knowledge to utilize credit granted with ultimate aim of increasing productivity level. This result aligns with Gbigbi & Ikechukwuka, (2020) who stated that farmers who are more experienced in farming are more conversant with the reality that agricultural production is a risky business, hence they are expectedly more willing to insure against such risk than new entrants into the business.

Majority (78.6%) of farmers were aware of credit services and institutions (Table 1). Awareness of credit services is relatively important for credit approachability in a certain community. The provision and strengthening of awareness about various credit services influences farmers' accessibility to credit. About 74.1% of the beneficiaries are literate (Table 1). The distribution shows that education influenced farmers' level of awareness as to how to minimize shocks of agricultural risks through credible sources. The high status of literacy equips farmers with sound managerial skills in farm business. Akinwale & Kyari (2022) and Torfi et al., (2023) observed that education influences adoption of innovations. Majority (44.6%) of farmers' received between ₦50001-₦100000 credits with only 4.5% received above ₦200000. Accessibility to fund may increase farmers' liquidity which may enhance capability to finance climate emergency, purchase inputs, and pay for hired labour.

### 3.2 Reasons for Financing Climate Emergency Adaptation

Diverse reasons were given for financing climate emergency adaptation (Table 2). About 98.2% of farmers each use credit for soil conservation and bushfire resistant buffers. Also, 92.9% use credit to adopt sustainable farm produce. Farmers (71.4%) noted that credit enabled them plant shrubs to prevent climate emergency effect while 75.0% used the money to purchase improved seedlings. This finding confirms early result that rural farmers earned their cash during agricultural operations, and utilized such income for planting/operation activities (Mungai et al., 2022). Thus, despite the enormous family size, labour constitutes serious problem for agricultural production in rural environment. Similarly, 83.9% of farmers used their money to plant trees to avert the adverse effect that climate emergency posed (Ohwo et al., 2020).

### 3.3 Sources of Adaptation Finance

Capital is a necessity as it motivates other factors' of production. If farmers are lent, they could overcome their challenges by using credit for buying goods and services necessary to make more efficient use of equipment. Table 3 shows various credit source used by farmers in financing climate emergency adaptation. Majority (95.5%) of farmers got money from informal money lenders due to bureaucratic processes in obtaining a loan from financial institutions which discouraged farmers. About 93.8% were financially assisted by various cooperative societies. This indicates positively that functionality of cooperative societies is widely recognized and well-practiced in our society, which would go a long way in helping farmers' access credits to increase productivity through financing adaptation measures. Friends and relatives were patronized by 74.1% of farmers. Although an easy source of financing, the major disadvantage is the soft and short-term financing system, meaning farmers having long-term financial obligations for financing climate emergency adaptation measures cannot depend on this source. Rotating credit was indicated by 63.4% in financing climate emergency adaptation measure for their farm. This entails that besides personal savings, rotating credit aids farmers with soft credit to run their activities. This goes to prove the prominence of grass root financing for sustainable production. Barrett (2022) observed that climate adaptation finance is obtained from either private or public sources.

Bank of agriculture, microfinance banks, and commercial banks sponsored only 58.0%, 50.0%, and 25.9% of farmers respectively (Table 3). Such limited level of patronage may be indicative of financial institutions high and stringent measures (high-interest rates, high collateral demand, etc) adopted in granting farmers loan, as they lack title deeds for pieces of land owned where collateral is mostly required. Timilsina (2021) and Balana & Oyeyemi (2022) observed that credit from formal financial institutions meets only a small portion of farmers' credit demand due to lack of collateral. It is obvious (Table 3) that a greater part of farmers depend on informal financial sources because the formal institutional sources were inaccessible.

Table 1. Socioeconomic Attributes of Farmers

Variables	Frequency	Percentage	Mean
Age (years)			
21-30	6	5.4	
31-40	38	33.9	
41-50	42	37.5	43 years
>50	26	23.2	
Gender			
Male	41	36.6	
Female	71	63.4	
Farm size (ha)			
0.1-1.0	36	32.1	
1.1-3.0	62	54.5	1.9ha
3.1-6.0	14	12.5	
Household size			
1-3	3	2.7	
4-6	78	69.6	6 people
7-9	30	26.8	
>9	1	0.9	
Cooperative organization (years)			
0	2	1.8	
1-5	27	24.1	
6-10	42	37.5	9 years
11-15	31	27.7	
>15	10	8.9	
Income level (₺)			
1-50,000	43	38.4	
50,001-100,000	53	47.3	
100,001-150,000	11	9.8	₺ 73067.23
150,001-200,000	3	2.7	
200,001 and above	2	1.8	
Farming experience			
3-5 years	18	16.1	
6-8	29	25.9	9 years
9-11	37	33.0	
Over 11 years	28	25.0	
Credit sources awareness			
Yes	88	78.6	
No	24	21.4	
Education			
No formal education	5	4.5	
Primary education	24	21.4	
Secondary education	72	64.3	Secondary
Tertiary education	11	9.8	
Volume of credit obtained			
₺ 1-50,000	33	29.5	
₺ 50,001-100,000	50	44.6	
₺ 100,001-150,000	16	14.3	Mean=₺ 95329.02
₺ 150,001-200,000	8	7.1	
₺ 200,001 and above	5	4.5	
Marital status			
Single	26	23.2	
Married	72	64.3	
Divorced	8	7.1	
Widow(er)	6	5.4	

Table 2. Reasons for Financing Climate Emergency Adaptation

Reasons	Frequency	Percentage
Soil conservation	110	98.2
Plant trees	94	83.9
Adopt sustainable farm produce	104	92.9
Construct thatch fence around farm land	60	53.6
Make buffers that are bush fire resistant	110	98.2
Buy improved seedlings	84	75.0
Hire additional labour	84	75.0
Plant shrubs	80	71.4
Buy farm equipment	64	57.1
Dig borehole for water/irrigation	76	67.9
Buy fertilizer	72	64.3

Table 3. Sources of Adaptation Finance for Climate Emergency

Sources	Frequency	Percentage
Friends/Relatives	83	74.1
Cooperative societies	105	93.8
Personal savings	84	75.0
Informal money lender	107	95.5
Microfinance banks	56	50.0
Bank of agriculture	65	58.0
Commercial banks	29	25.9
Rotating credit	71	63.4

### 3.4 Factors Influencing Access to Adaptation Finance

The multiple regression model used to predict factors affecting volume of credit sourced by farmers (Table 4) shows a coefficients ( $R^2$ ) of 0.718, indicating that the independent variables contributed 71.8% of changes in dependent variable. The overall regression equation was significant at 1.0% probability level, indicating that the independent variables significantly affected quantity of credit obtained by farmers.

The eight significant explanatory variables were;

1. Gender: Gender interacted positively with credit access at 5.0% significant level. This infers that male farmers stand better chance of obtaining credit because men can easily meet credit requirements needed to get credit when matched to women. In addition, men own most businesses and this increase their demand for credit to their female counterparts. Ogundipe et al. (2019) believed that being a female reduces your chances of accessing credit.

2. Age: Age was positively and significantly related to amount of credit accessed by farmers to carry out climate emergency adaptation practices. This agreed with Adeagbo et al. (2021) that age which goes with experience enables farmers to make a better evaluation of risks involved in climate emergency investment decisions.

3. Education: Coefficient of education was positively and significantly related to credit access ( $P > 0.05$ ). The quantity of loan collected therefore increase with increase in educational attainment. Undeniably, positive sign in the estimate implies that persons with higher education are favoured in loan approvals more readily than their equals with no education. This denotes that as farmer advances in education, the probability that he will obtain credit is increases. Education and training are associated with ability to understand and interpret terms of credit. This conforms to Silong & Gadanakis (2020) who reported a positive relationship between credit accessibility and education.

4. Farming experience: Farming experience was positively significant. The significant positive sign on farming experience indicates that a direct correlation exists between farmers' experience and credit obtained. This infers that a unit increase in farmers' experience increases the probability to have access to credit. This is similar to Awe et al. (2021) that experience is a significant factor influencing farm management and decision-making.

5. Income: farmers' income was positively significant with credit obtained. High-income farmers have a high probability of accessing credit from institutional sources. Furthermore, high-income-level farmers are confident in repaying credits acquired from official sources. Similar empirical findings were reported by Gbigbi & Ikechukwuka (2020) that a significantly positive relationship exists between credit accessibility and income.

6. Marital status: A positive direct relationship exists between marital status and credit obtained at 1.0% level because married farmers are seen as responsible and far-sighted with finance than unmarried individuals; therefore, finance facilitators rely on their strength of financial responsibility and through that can liberally give them credit. Gbigbi (2017) discovered that married credit applicants stood a better chance to obtain credits than singles.



**7. Cooperative membership:** Cooperative membership positively influenced significant at 1.0% level. Farmers who belong to farmer's groups have a higher probability to get credit facilities. Cooperative societies aid their members to get credit facilities and act as trustees. The result is synonymous with earlier findings by Agarwal (2020) that farmer groups formation empowers farmers with improved farming and administrative skills, reduced working costs and increased benefits from collective action.

**8. Awareness of credit sources:** This was positive and significantly ( $P > 0.001$ ) related to credit access. The magnitude of loan collected therefore increases with increased awareness of credit availability. The positive relationship was expected because individuals who are aware of credit sources have better chances to obtain more credit than those not aware. Ojo & Baiyegunhi (2020) found that awareness of credit availability had a significant positive effect with volume of credit sourced by farmers from either formal or informal financial institutions.

### 3.5 Problems of Adaptation Finance Procurement for Climate Emergency

Challenges to credit acquisition (Table 5) shows that 90.2% of farmers agreed that financial institutions require security to give credit. Most farmers are poor and do not have security to get loans and get scared. Oluwaseun (2020) opined that absent of security pushes farmers to patronize informal sources in Edo State. This is followed by a short period of repayment (89.3%). Farmers' incapability to meet short-duration repayment required by banks is a cardinal problem affecting agricultural sector.

Awareness of credit sources is fundamental for agricultural development but Nigerian farmers seldom feel the benefits of agricultural invention either because they have no access to such vital information or poor dissemination. About 83.0% of farmers complained of not being informed or lacking adequate knowledge of government's efforts at providing credit with little interest rates. This has denied these farmers opportunity of benefitting from these schemes. The next problem faced is delay in disbursement (83.0%) obtaining credit which was not encouraging. Interest rate (81.3%) discourages farmers'. High interest rate required by financial institutions cannot be afforded by poor farmers. These plague a heavy burden on farmers to rally up with interest requirements and sometimes farmer has nothing to gain after interest has been paid. Dhakal & Pradhan (2023) identified problems of accessing adaptation finance.

The next problem faced was a hidden charge (79.5%). Most farmers complained that although credit applied for was disbursed late, the interest inherent started accumulating before they received the fund and the credit institutions did not agree to count from when farmer received credit. In addition, farmers are sometimes forced to pay hidden administrative charges by financial institution. Some application fees borrowers were meant to pay also added up as hidden charges in their bid to access credit from financial institutions. D'souza (2020) and Kidane et al., (2023) identified vagaries of problems in accessing agricultural credits.

Table 4. Factors Influencing Access to Adaptation Finance

Variables	Linear	Exponential	Semi log	Double log
	Coefficient	Coefficient	Coefficient	Coefficient
Constant	183591.975 (1.398)	12.026 (34.882)***	741764.053 (2.006)**	9.322 (9.611)***
Gender	10334.110 (0.230)	0.240 (2.037)**	1588.454 (0.310)	0.027 (1.995)*
Age	1672.304 (1.079)	0.007 (1.821)*	83942.176 (1.156)	0.353 (1.854)*
Education status	51634.472 (2.155)**	0.128 (2.038)**	104119.369 (1.909)*	0.281 (1.967)*
Experience	4118.969 (1.353)	0.016 (1.996)*	3109.357 (0.106)	0.006 (0.085)
Farm size	28577.915 (1.951)*	0.066 (1.709)	74753.438 (1.501)	0.171 (1.308)
Income	0.232 (3.170)**	3.618e-007 (1.880)*	38257.420 (2.008)**	0.050 (1.005)
Marital status	39131.520 (3.253)**	0.152 (4.820)***	91328.587 (2.337)**	0.366 (3.574)***
Cooperative membership	427115.952 (9.719)***	1.474 (12.774)***	48489.175 (9.985)***	0.161 (12.610)***
Household size	12594.423 (1.088)	0.036 (1.198)	101280.195 (1.528)	0.218 (1.254)
Credit awareness	56342.868 (1.228)	0.284 (2.356)**	1837.836 (0.360)	0.018 (1.329)
R-square	0.615	0.718	0.565	0.683
F-ratio	16.124	25.753	13.142	21.761

\*\*\*, \*\* and \* = significant at 1%, 5% and 10% respectively

Table 5. Problems of Adaptation Finance Procurement

Problems	Frequency	Percentage
Lack of awareness	93	83.0
Lack of collateral	101	90.2
Difficulty in getting surety	68	60.7
Delay in disbursement	93	83.0
Short period of repayment	100	89.3
High interest rate	91	81.3
Bureaucracy in loan processing	68	60.7
Hidden charges	89	79.5

### 3.6 Testing of Hypotheses

Significant relationship exists between credit sources and adoption of climate emergency adaptation measures with Chi-square value (16.679,  $df=7$ ,  $P < 0.05$ ) (Table 6). The rejection of null hypothesis led to acceptance that there exist significant relationship between credit sources and adoption of climate emergency adaptation measures. Lack of credit information represents a significant impediment to utilization of climate emergency adaptation measures, especially for smallholders' production and farmers' efficiency level. This finding concurs with Mariyono (2019) where only 5.0% of less progressive farmers obtained loans. This is disadvantageous to farmers who operate on a small scale level and are less influential in the credit sector (Erdal et al., 2023). Poor credit condition suppresses capacity to adopt an innovation. Although credit may appear quite rational to a farmer, social sources outside farmer control determine his tendency to adopt technology. The optimal effective sorghum technologies require more fertilizer, improved seed variety, and right timing at planting to perform well. Credit, is a powerful enabler in improving effective access to technology.

Chi-square test revealed a significant relationship between challenges and adoption of climate emergency adaptation measures (Chi-square value=12.721,  $df=5$ ,  $P < 0.05$ ) leading to the rejection of the null hypothesis. Absence of collateral signifies an impediment to credit accessibility for utilization of climate emergency adaptation measures for enhanced productivity (Table 6).

### 3.7 Level of Utilization of Climate Finance Adaptation

Table 7 shows the extent farmers use adaptation techniques. The classification and evaluation of numbers of innovations exploited by each farmer was utilized to determine its efficacy. Majority (51.8%) of farmers were rated as "average," while 28.6% rated as "just high," (Table 8). Farmers' use of adaptation methods was also rated poorly by 12.5%, with only 7.1% of farmers rating it very well. It was deduced that few adaptation schemes were being used to combat climate change, most likely due to a lack of finance.

Table 6. Chi-square Tests

	Value	Df	Asymp. Sig. (2-sided)
Credit sources and adoption of adaptation measures			
Pearson Chi-Square	16.679 <sup>a</sup>	7	0.020
Likelihood Ratio	20.928	7	0.004
Linear-by-Linear Association	6.244	1	0.012
N of Valid Cases	112		
a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is 1.34			
Challenges and adoption of adaptation measures			
Pearson Chi-Square	12.721 <sup>a</sup>	5	0.026
Likelihood Ratio	15.245	5	0.009
Linear-by-Linear Association	4.758	1	0.029
N of Valid Cases	112		
a.5 cells (41.7%) have expected count less than 5. The minimum expected count is 1.34			

Table 7. Level of Utilization of Climate Finance Adaptation

Utilization level	Frequency	Percentage
Very high	8	7.1
Just high	32	28.6
Average	58	51.8
Low	14	12.5

#### 4. Conclusion and Recommendations

Climate emergency adaptation financing has not been popularly utilized by farmers. By implication, government policies aimed at enhancing and sustaining food production without effective financing sources may not meet with huge success. Financing is a foremost catalyst to activate adaptation measures to absorb shock of climate emergency on carrying out sustainable agricultural production. The findings have shown that farmers rarely patronized formal credit. Collateral was a serious problem among others that affect credit procurement. This research concludes that household characteristics, sex, age, education, experience, income status, marital status, cooperative membership, and credit awareness are strong determinants of credit accessibility.

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