



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Udeme Henrietta Ukpe<sup>1</sup>✉, Bethel Fidelis Ewung<sup>2</sup>**

<sup>1</sup> Federal University Wukari, Nigeria

<sup>2</sup> Joseph Sarwuan Tarka University, Makurdi, Nigeria

## **Determinants of Demand and Participation by Poultry Farmers in Formal and Informal Credit Markets in Cross River State, Nigeria**

**Abstract.** A typical challenge for over 65 percent of the Nigerian population living in rural areas and surviving through agricultural activities is access to credit facilities needed to procure technological inputs that trigger productivity. This has consequently limited the capacity of small and micro agro-enterprises - especially poultry enterprises - to develop. Therefore, this study was undertaken to analyse factors affecting the demand and participation of agro-entrepreneurs, particularly poultry farmers, in formal and informal credit markets in Cross River State, Nigeria. Purposive and random sampling techniques were used to select 295 poultry farmers. Data were collected for the 2022 production cycle using structured questionnaires and interviews, and the results were analysed using a multinomial logit model. The results revealed that socioeconomic and enterprise characteristics such as educational level, gender, farm capacity, poultry training, and household assets were significant factors that influenced the participant's choice of credit institution in the study area. Also, favourable terms, outstanding loans and easier access to loans were the institutional factors that affected credit demand. Training and workshop programmes should be organised by government and corporate financial institutions to encourage participation in credit markets so that the abundant available funds can be efficiently utilised in the production process.

**Keywords:** demand, participation, farmers, poultry, credit

**JEL Classification:** Q1, Q12, Q13, R15

### **Introduction**

Access to credit is crucial for agricultural development, particularly for small-scale farmers who often face financial constraints. The demand and participation of poultry farmers in credit markets are influenced by a range of factors, including socioeconomic characteristics, farm-specific variables, and institutional factors. Previous studies have identified factors such as farm size, education level, farming experience, interest rates, collateral requirements, and access to information as significant determinants of credit demand and participation in the agricultural sector (Ajayi et al., 2019; Ogunleye et al., 2021). However, it is important to note that the poultry sector has unique characteristics that may differentiate it from other agricultural sub-sectors. Factors such as disease outbreaks, high input costs, and seasonality may affect poultry farmers' credit demand and participation differently (Duru, 2021).

---

<sup>1</sup> Dr., Department of Agricultural Economics and Extension, Federal University Wukari, PMB 1020 Wukari, Taraba State, Nigeria; e-mail: ukpe@fuwukari.edu.ng; <https://orcid.org/0000-0001-7633-5112>;  
Corresponding author

<sup>2</sup> Dr., Department of Agricultural Economics, Joseph Sarwuan Tarka University, Makurdi, PMB 2373, Makurdi, Benue State, Nigeria; e-mail: beethelwung@gmail.com; <https://orcid.org/0000-0002-2766-4558>



While there have been studies (Ajayi et al., 2019; Oluwatayo, 2020; Duru, 2021; Ogunleye et al., 2021; Ogunniyi, A. I., & Agbola Ogunniyi et al., 2022) conducted on the factors affecting demand and participation of credit among farmers in Nigeria, there exists a research gap specifically concerning poultry farmers and the differentiation between informal and formal credit sources. The existing literature (Balana et al., 2022; Chandio et al., 2021; Mwongo and Naho, 2021; Asenath and Yiorgos, 2020; Murendo et al., 2020) has primarily focused on credit access and utilisation in the broader agricultural sector, without specifically examining the unique circumstances and challenges faced by poultry farmers.

The knowledge gap lies in the need for a more comprehensive understanding of the factors that influence the demand and participation in informal and formal credit among poultry farmers in Nigeria. Poultry farming is a significant subsector of agriculture in the country, and access to credit plays a crucial role in facilitating investment, expansion, and the adoption of modern production techniques (Osuntade & Babalola, 2021). However, the determinants and barriers to credit access and utilisation among poultry farmers, particularly in relation to informal and formal credit sources, remain understudied.

Additionally, there is limited research that explores the specific characteristics and dynamics of informal credit sources utilised by poultry farmers. Informal credit, such as loans from friends, family, or local moneylenders, often serves as an important source of financing for farmers, especially those with limited access to formal financial institutions. Understanding the drivers and constraints associated with informal credit among poultry farmers can provide insights into the informal financial networks that exist within the sector and inform policies and interventions that support their inclusion and sustainability (Egbo et al., 2021).

Furthermore, the existing literature may lack a comprehensive analysis of the factors that differentiate the demand and participation in informal and formal credit among poultry farmers. Factors such as farmers' socioeconomic characteristics, farm characteristics, the ease of getting a loan, favourable terms, outstanding loans, being deprived of a loan, poultry training, easier formalities, and flexible payback may influence their preference for informal or formal credit sources. Investigating these factors can provide a deeper understanding of the decision-making processes of poultry farmers and help tailor credit policies and programmes to better meet their specific needs and preferences.

In Nigeria, the poultry sector plays a significant role in the agricultural economy. The Nigerian poultry industry contributes approximately 25% to agricultural GDP (Masak et al., 2022) and understanding the factors that affect the demand and participation of poultry farmers in formal and informal credit markets is essential for promoting sustainable growth in the industry. This study seeks to build upon this existing body of research by conducting a comprehensive analysis of the factors affecting the demand and participation of poultry farmers in both formal and informal credit markets in Cross River State, Nigeria. Cross River State is an ideal location for this investigation due to its diverse agricultural landscape and the increasing importance of poultry farming in the region. Understanding the factors that influence poultry farmers' demand and participation in formal and informal credit is crucial for several reasons. Firstly, the poultry sector plays a significant role in the Nigerian economy, contributing to food security, employment generation, and income generation for farmers (Mohammed, 2015). Enhancing credit access for poultry farmers can contribute to the growth and development of the sector.

Secondly, the unique characteristics and challenges poultry farmers face require tailored interventions. Factors such as high input costs, market volatility, and disease outbreaks pose specific challenges to poultry farmers (Anosike et al., 2018), which may influence credit demand and participation differently compared to farmers in other agricultural sectors. Therefore, studying the factors specific to poultry farming can provide insights into designing targeted credit programmes and policies.

Thirdly, the informal credit market plays a significant role in Nigeria's agricultural finance system (Asom et al., 2023). Understanding the factors that influence poultry farmers' participation in informal credit markets can help identify opportunities to enhance the effectiveness and inclusiveness of these informal credit channels. Additionally, studying the factors that influence poultry farmers' participation in formal credit markets can inform policies aimed at improving access to formal financial institutions.

Despite the importance of credit in poultry farming, there exists a research gap in understanding the specific factors that influence poultry farmers' decisions to seek credit and their choice between informal and formal credit sources in Nigeria. While some studies have explored credit access in agriculture more broadly (Oluwatayo, 2020; Ogunniyi et al., 2022), there is a need for more focused research that considers the unique characteristics and challenges faced by poultry farmers. Furthermore, Nigeria's credit sector's evolving financial landscape, policy changes, and technological advancements necessitate an updated and context-specific analysis of credit utilisation among poultry farmers.

Over the past few years, several studies have highlighted the challenges and opportunities facing poultry farmers in Nigeria. According to a report by the Central Bank of Nigeria (2017), the agricultural sector, including poultry farming, has shown substantial growth potential, but access to finance remains a critical bottleneck. This finding is echoed by research conducted by Adeoye et al. (2019), which emphasises the need for improved credit access for small-scale poultry farmers in Nigeria to enhance their productivity and income.

However, the factors influencing poultry farmers' decisions to seek credit and their choice between formal and informal credit sources have evolved over time, as Ogunniyi et al. (2022) underscore the role of technological advancements and changing market dynamics in shaping credit preferences among poultry farmers in Nigeria. It is to this effect that this study aims to determine the factors affecting the demand and participation of poultry farmers in formal and informal credit markets in Cross River State, Nigeria.

In the subsequent sections of this study, we delve into the overview of the determinants of agricultural credit demand and participation, the analytical framework, materials and methods, results and discussion, and a conclusion.

## **Determinants of agricultural credit demand and participation - literature review**

Several studies have examined the determinants of credit demand and participation among farmers in various contexts. For instance, Osei et al. (2019) found that factors such as farm size, education level, and access to extension services significantly influenced farmers' credit demand in Ghana. Similarly, Murendo et al. (2020) identified factors such as land tenure security, risk perception, and distance to financial institutions as important

determinants of credit participation among smallholder farmers in Zimbabwe. Kumar et al. (2017) found that land ownership positively correlates with credit participation among farmers in India, emphasising the role of collateral in formal credit markets. Mishra et al. (2019) revealed that factors such as age, experience, and risk aversion were important determinants of credit demand among smallholder farmers in India. Murendo et al. (2018) found that farmers located closer to markets were more likely to participate in formal credit markets, while those in remote areas preferred informal credit. Additionally, the perception of risk, especially regarding weather-related uncertainties, affects the credit decisions of farmers in Zimbabwe. Asfaw et al. (2021) highlighted the role of mobile phone usage and access to market information in enhancing farmers' participation in both formal and informal credit markets in Ethiopia. Similarly, Rahman et al. (2023) found that access to digital financial services positively influenced farmers' credit demand and participation in Bangladesh. Ali & Sarker (2018) found that the availability of government-sponsored agricultural credit programmes significantly influenced farmers' credit demand and participation in Bangladesh.

In the context of formal credit markets, several studies have focused on the role of institutional factors in influencing credit demand and participation. For example, Birungi et al. (2018) found that the level of financial literacy and the quality of financial institutions were key determinants of farmers' participation in formal credit markets in Uganda. Karimov et al. (2020) highlighted the importance of collateral requirements and loan processing time in shaping farmers' decisions to participate in formal credit markets in Tajikistan.

In contrast, studies examining the factors influencing credit demand and participation in informal credit markets have also provided valuable insights. For instance, Doss et al. (2018) in Ethiopia found that social networks and trust played a critical role in farmers' decisions to access informal credit. Similarly, Agbola et al. (2022) revealed that factors such as social capital, informal savings groups, and cultural norms significantly influenced farmers' participation in informal credit markets in Nigeria. Similarly, Alemayehu et al. (2020) in Ethiopia and Murendo et al. (2021) in Zimbabwe highlighted the importance of social networks and trust in facilitating farmers' participation in informal credit markets.

## **Research data and methods**

### ***The study area***

The study was carried out in Cross River State, in south-south Nigeria. The state was created in 1967 from part of the former Eastern Region, and was known as the South-Eastern State until 1976, when it adopted its present name. The state originally included what is now called Akwa Ibom State. It has a land mass area of 20,156km<sup>2</sup> and borders Cameroon to the east. It is named for the cross river which passes through the state. Its capital is Calabar, and consists of 18 local government areas with three major languages of Efik, Ejagham, and Bekwara, found across the three senatorial districts of south, central, and north, respectively. The state lies between latitude 5.8702oN, and longitude 8.5988oE. The people of the state are highly engaged in farming, trading, fishing, and hunting. The major crops grown include: yam, cassava, cocoyam, rice, maize, vegetables, bush mango, oil palm, and cocoa (Bassey and Nzeakor, 2019).

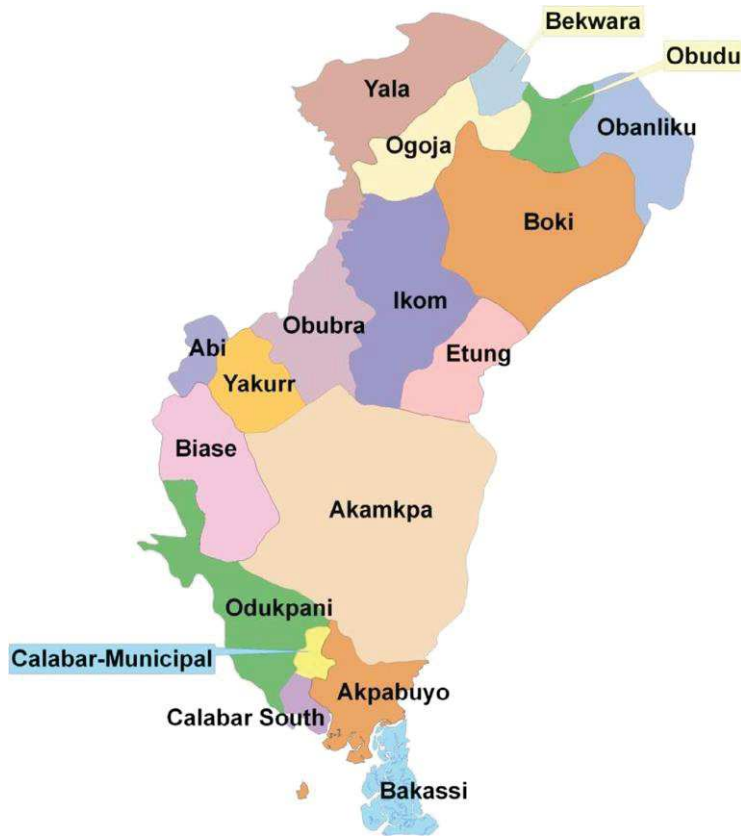


Fig. 1. Map of Cross River State, Nigeria, showing local government areas

Source: own work.

### ***Population, sampling procedure and data collection***

A two-stage sampling technique was adopted. The first stage was a purposive sampling of two local government areas from each of the agricultural zones. This was done with due regard to the relative concentration of poultry farms in these areas. The second stage follows a random sampling process of sampling five (5) percent of the registered poultry farms (Registered farms had a minimum of two hundred (200) birds on the farm) from these local government areas. Data was collected from 147 poultry farmers for the 2022 production cycle.

**Table 1. Sampling frame**

| Agricultural zone | Local Government Area | Registered Farm Population | Estimated Sample |
|-------------------|-----------------------|----------------------------|------------------|
| Calabar           | Akamkpa               | 1920                       | 96               |
|                   | Calabar Municipal     | 260                        | 13               |
| Ikom              | Ikom                  | 320                        | 16               |
|                   | Obubra                | 260                        | 13               |
| Ogoja             | Ogoja                 | 140                        | 7                |
|                   | Yala                  | 40                         | 2                |

Source: Cross River State Ministry of Agriculture, Department of Livestock Development and Services.

**Analytical framework**

The multinomial logit (MNL) model is used to analyse choices among multiple discrete alternatives (McFadden, 1974). It is widely applied in various fields, including economics, marketing, transportation, and social sciences. The MNL model is based on random utility theory, which assumes that individuals make choices based on the utility they derive from each alternative (Train, 2009).

The MNL model assumes that individuals face a set of mutually exclusive and exhaustive alternatives and must choose one option from the available alternatives. It models the probability that an individual chooses a specific alternative as a function of the alternative-specific utility and a scaling parameter. The MNL model assumes that the utility of each alternative can be decomposed into a systematic component and a random error term.

Mathematically, the MNL model can be represented as shown in Greene (2012):

$$P(i) = \exp(V_i) / \sum[\exp(V_j)] \dots\dots\dots(1)$$

where P(i) is the probability of choosing alternative i, V<sub>i</sub> is the systematic utility associated with alternative i, and the sum in the denominator is taken over by all available alternatives.

The systematic utility V<sub>i</sub> is typically modelled as a linear function of explanatory variables and associated coefficients:

$$V_i = \beta'X_i \dots\dots\dots(2)$$

where β is a vector of coefficients and X<sub>i</sub> is a vector of explanatory variables for alternative i. The coefficients represent the marginal impact of each explanatory variable on the utility of the corresponding alternative.

The MNL model assumes the independence of irrelevant alternatives (IIA) property, which implies that the ratio of choice probabilities between any two alternatives is constant and unaffected by the presence or absence of other alternatives (Greene, 2012). This assumption allows for tractable estimation and prediction but may be violated in certain contexts, leading to the development of alternative models such as nested logit or mixed logit.

**Variable specification / model specification**

The multinomial logit model is based on the random utility model (Oluoch-Kosura et al., 2001). The utility to a participant (farmer) is a linear function of factors characterised by socioeconomic characteristics, enterprise characteristics, credit status, and institutional

factors. The essence is to ascertain the relative choice between formal and informal sources or both by participants.

Thus,

$$\left. \begin{aligned} (U (\text{alternative } 0) &= \beta_j X_o + e_i) \\ (U (\text{alternative } 0) &= \beta_j X_o + e_i) \\ (U (\text{alternative } 0) &= \beta_j X_o + e_i) \end{aligned} \right\} \dots\dots\dots(3)$$

The probability of a participant choosing an alternative is equal to the probability that the utility of that particular alternative is greater than the choice set. That is, given (0Dependent variable) = choice 1, if  $U (\text{alternative}1) > U (\text{alternative}2)$ , Where  $1 \neq 2$ , then

$$B_1 X_1 + e_j > B_2 X_2 + e_2 \dots\dots\dots(4)$$

The dependent variable was a discrete variable taking values 0, 1, 2, 3 for cases where a farmer did not obtain credit at all, obtained credit from formal institutions, informal sources, or both formal and informal sources, respectively.

The analysis of the problem proceeds in the following way

$$P_{0i} = a_0 + \beta_0 X_i \dots\dots\dots(5)$$

$$P_{1i} = a_1 + \beta_1 X_i \dots\dots\dots(6)$$

$$P_{2i} = a_2 + \beta_2 X_i \dots\dots\dots(7)$$

$$P_{3i} = a_3 + \beta_3 X_i \dots\dots\dots(8)$$

Where  $P_0, P_1, P_2$  and  $P_3$  = probability of no credit, formal credit, informal credit or both formal and informal credit.

Thus,

$P_{0i}$  = Probability that individual  $i$  will seek no credit;

$P_{1i}$  = Probability that individual  $i$  will seek credit from formal sources;

$P_{2i}$  = Probability that individual  $i$  will seek credit from informal sources;

$P_{3i}$  = Probability that individual  $i$  will seek credit from both formal and informal sources;

$X_i$  = Value of  $X$  for the  $i$ th individual (independent variables);

$a$  = Intercept;

$B$  = Coefficient.

In addition, the objective of using the multinomial model was to test the relationship between the determining factor and to use the estimated coefficient to generate the probabilities of the respondents falling into one of the credit markets.

## Research results

The result of the socioeconomic characteristic of poultry farmers presented in Table 2 shows that poultry farmers in the study area were mostly male. This is attributed to the fact that the males most often represent the head of the household while their wives assist. Most female household heads were widows or divorcees. Over 96.6% had formal education at different levels. The majority (68 percent) of the farmers had tertiary education, while 28.6 % had lower levels of education. This shows that poultry farmers in the study are usually educated, which probably reflects their awareness of and access to credit information. The



farmers were mostly part-time farmers, given that they had other sources of income. The majority (74.1 percent) of the respondents were married, while 15.6 percent were single, 9.5 percent were divorced, and 0.70 percent were widowed. Farmers with the highest frequency (43.5 percent) had a farm capacity range of between 1 and 600. This indicates that the bulk of the farmers are small-scale farmers. The second highest frequency is 27.2 percent, with a farm capacity of between 601 and 1200.

**Table 2. Socioeconomic characteristics of poultry farmers**

| Socioeconomic Characteristics   |                     | Frequency | Percentage |
|---------------------------------|---------------------|-----------|------------|
| Gender                          | Female              | 16        | 10.9       |
|                                 | Male                | 131       | 89.1       |
|                                 | Total               | 147       | 100.0      |
| Education                       | No formal education | 5         | 3.4        |
|                                 | Primary education   | 22        | 15.0       |
|                                 | Secondary education | 20        | 13.6       |
|                                 | Tertiary education  | 100       | 68.0       |
|                                 | Total               | 147       | 100.0      |
| Marital status                  | Single              | 23        | 15.6       |
|                                 | Married             | 109       | 74.1       |
|                                 | Divorced            | 14        | 9.5        |
|                                 | Widowed             | 1         | 0.7        |
|                                 | Total               | 147       | 100.0      |
| Farm capacity (number of birds) | 1-600               | 64        | 43.5       |
|                                 | 601-1200            | 40        | 27.2       |
|                                 | 1201-1800           | 15        | 10.2       |
|                                 | 1801-2400           | 19        | 13.0       |
|                                 | 2400-3000           | 9         | 6.1        |
|                                 | Total               | 147       | 100.0      |

Source: Field survey, 2022.

The Chi<sup>2</sup> at 51 degrees of freedom was given as 71.36, and probability > Chi<sup>2</sup> being 0.0314 reveals that it is significant at 5%. The result of the multinomial logit model is presented in Table 3. Three categories of credit markets were defined earlier. These include formal institutions, informal sources and both formal and informal sources. The coefficient of the probabilities of the formal, informal and both formal and informal sources was estimated with respect to no credit demand (i.e. the probability that the farmer did not seek credit at all). A positive coefficient shows that the probability of a respondent falling in the numerator category is greater than the probability of falling in the denominator category, while a negative coefficient gives the opposite.

**Table 3. Multinomial logit model result of the factors affecting the demand and participation of poultry farmers in Cross River State credit markets**

| Independent Variables               | Dependent Variables  |                     |                     |
|-------------------------------------|----------------------|---------------------|---------------------|
|                                     | $\frac{P_1}{P_0}$    | $\frac{P_2}{P_0}$   | $\frac{P_3}{P_0}$   |
| Gender                              | 1.7438 (0.9826)*     | 0.1432 (1.2929)     | -0.5141 (1.1517)    |
| Education                           | -1.5885 (1.1014)     | -2.8314 (1.4765)*   | -2.1812 (1.3824)    |
| Household size                      | 1.0747 (0.7585)      | -0.6615 (0.9691)    | 0.4772 (0.9288)     |
| Years of experience                 | -0.7742 (0.8601)     | -0.0168 (1.1682)    | -1.6910 (1.1305)    |
| Household assets                    | -0.8651 (0.4491)*    | -0.3279 (0.6415)    | 0.4363 (0.5422)     |
| Membership of association           | -21.4701 (13.4332)   | -21.6003 (13.3243)  | -22.018 (13.4637)   |
| Farm capacity                       | 1.2928 (0.7294)*     | 0.3351 (1.1997)     | 1.0403 (0.9622)     |
| Distance from a lending institution | 0.1099 (0.4430)      | 0.9441 (0.6233)     | 0.1393 (0.5839)     |
| Output                              | -0.8167 (0.6979)     | 0.3259 (1.1317)     | -0.2424 (0.8700)    |
| Outstanding loan                    | 1.3363 (0.9606)      | 3.3297 (1.2489)***  | 2.7951 (1.1666)**   |
| Deprived of loan                    | -0.0983 (1.0326)     | 1.5869 (1.2224)     | 0.8060 (1.2341)     |
| Poultry training                    | 2.0876 (1.2432)*     | 3.0200 (1.7184)*    | 2.1045 (1.4609)     |
| Easier formalities                  | 0.5201 (0.7447)      | 0.8693 (0.9688)     | 0.5144 (0.9054)     |
| Flexible payback                    | -1.1143 (0.709)      | -0.9661 (0.9700)    | -1.3659 (0.9426)    |
| Interest rate charged               | -1.4983 (1.0599)     | -1.8349 (1.2753)    | -1.1767 (1.2371)    |
| More favourable terms               | 0.6487 (0.8528)      | 1.8014 (1.0754)*    | -1.0363 (1.3607)    |
| Easier to get a loan                | -3.4624 (1.1931)***  | -4.5209 (1.6004)*** | -3.9167 (1.6069)**  |
| Constant                            | 34.7779 (11.0596)*** | 18.4263             | 26.4615 (12.3700)** |
| Log-likelihood:                     | 106.577              |                     |                     |
| LR Chi <sup>2</sup>                 | 71.36                |                     |                     |
| df                                  | 51                   |                     |                     |

\*, \*\*, \*\*\* refer to significant at 10%, 5%, and 1%, respectively; Figure in () is standard error

Source: Author's analysis.

### **Formal institutions**

In the model, for demand from formal institutions, five variables were significant at different levels. They are gender, household assets, farm capacity, training and how easy it is to get a loan. The coefficient of gender was statistically significant at 1%. This implies that gender affects credit demand from formal institutions. The positive sign of the coefficient reveals that the probability of males seeking loans from formal sources is higher than for females. The male respondents showed a higher probability of seeking credit from formal sources than not seeking it at all. This can be attributed to the fact that land and property ownership are traditionally biased towards men, and formal financial institutions often require collateral to provide credit. If men have greater ownership rights over land and other assets, they may find it easier to meet these requirements. This finding is contrary to the findings of Mwonge & Naho (2021), who found decreased credit demand by smallholder farmers in Morogoro, Tanzania.

Household assets were significant at 5% in determining participation in formal institutions. A respondent with low-value household assets has a higher probability of seeking formal credit. The higher the household assets, the lower the probability of seeking credit from formal sources than not seeking credit because when households have higher levels of assets, they may have greater financial resources available to fund their agricultural activities without relying on external credit. Credit demand from households with lower household assets has a high probability of improving welfare. The result is contrary to the Assogba et al. (2017) study on the determinants of credit access by smallholder farmers in North-East Benin. They found that access to credit among smallholder farmers is determined by the number of years of schooling, literacy, membership, guarantor, collateral and interest rate.

The sign of the coefficient for farm capacity was found to be positive and statistically significant at 1% for formal institutions. This implies that a farmer with a large farm capacity has a higher probability of seeking credit from formal sources than not seeking credit since farmers with large farm capacities may have greater investment opportunities to expand their operations, purchase machinery, or implement new technologies. These activities often require substantial financing, which formal sources of credit are better equipped to provide. As a result, farmers with large farm capacities are more likely to seek credit from formal sources to seize these investment opportunities. The result also showed that farm capacity significantly affected participants' choice of formal institutions. This result is in line with Chandio et al. (2021), who found that landholding size significantly influences credit demand.

Poultry training was found to be a determining factor that affects farmers seeking formal credit. The positive sign implies that farmers who had one form of training, e.g. production, farm risk management, waste management or marketing) will most likely seek formal credit. It was also found to be statistically significant at 10%.

Institutional factors like being able to get a loan more easily significantly affected farmers seeking formal credit. The negative sign reveals that the probability that a farmer seeks credit from formal sources decreases with the difficulty experienced in getting a loan. It was found to be statistically significant at 5%. This finding is in line with Balana et al. (2022), who found that difficulty in getting loan factors such as interest rate, location and inadequate collateral security reduced credit demand in Tanzania and Ethiopia.

### ***Informal sources***

In the model, five variables were found to have significantly affected informal credit demand. These include education, outstanding loans, poultry training, more favourable terms, and easier access to a loan.

The educational level of the respondent was found to be statistically significant at 1%. This shows that educational level was a determining factor for the choice of informal credit sources. The negative sign of the coefficient implies that the lower the level of education of respondents, the more likely they are not to seek credit than to seek credit from informal sources. Farmers with lower levels of education may have limited knowledge and awareness about the availability of credit from informal sources. They might not be familiar with the services and benefits offered by such institutions or may not know how to access them. As a result, they may choose not to seek credit from these sources. This finding is in line with the

findings of Asenath & Yiorgos (2020), who found that education increases credit demand among rural livestock farmers in Nigeria.

In contrast, the coefficient of easier access to a loan was significant and negative, implying that the easier it is to get a loan, the more likely it is for the farmers not to seek a loan from informal credit sources. This finding is in line with Balana et al. (2022). The coefficient of outstanding loans was found to be positively related to informal credit demand. The positive sign indicates that a farmer with an outstanding loan has a higher probability of seeking credit from informal sources than not seeking it at all. A farmer who already has an outstanding loan from a formal institution might face difficulties in obtaining additional credit from the same source, and in such cases, farmers may turn to informal sources as an alternative option for accessing additional credit.

It was found to be statistically significant at 5%. This is contrary to the findings of Balana et al. (2022), who found that farmers with outstanding loans had no reason to seek credit in Ethiopia and Tanzania. Furthermore, poultry training was found to be a determining factor that affects farmers seeking informal credit. The positive sign implies that farmers who had one form of training (e.g. production, farm risk management, waste management, or marketing) would show a higher probability of seeking a loan from informal credit sources than not seeking credit. It was also found to be statistically significant at 10%.

More favourable terms were found to have significantly affected credit demand from informal sources. The positive coefficient indicates that respondents show a higher probability of seeking credit from informal sources as the terms and conditions favour them more than not seeking credit. It was statistically significant at 5%, indicating that it significantly affected informal credit demand. This finding is in line with Taremwa et al. (2022), who found that favourable terms ease credit demand in Rwanda.

### ***Both formal and informal credit***

For the formal and informal sources, two variables significantly affected credit demand. These were outstanding loans and easier access to a loan. An outstanding loan was found to be statistically significant at 1%. The positive sign of the coefficient reveals that there is a higher probability for respondents to seek both formal and informal sources than not to seek credit. The institutional factor of making it easier to get a loan also significantly affected credit demand from both formal and informal sources. The probability of seeking loans from both formal and informal sources increases with terms and conditions that favour the farmers. When the terms and conditions of loans are favourable, such as lower interest rates, longer repayment periods, or flexible repayment terms, farmers are more likely to perceive borrowing as a cost-effective option. Lower borrowing costs make loans more attractive, which can increase the credit demand from both formal and informal sources.

## **Conclusion**

This study was carried out to analyse factors affecting the demand and participation of poultry farmers in formal and informal credit markets in Cross River State, Nigeria. The results revealed that the majority of the poultry farmers were male, married and had one form of formal education. Socioeconomic and enterprise characteristics such as educational level,

gender, farm capacity, poultry training, and household assets are significant factors that influenced the participant's choice of credit institution in the study area. Also, favourable terms, outstanding loans and easier access to loans were the significant factors that affected credit demand. Against this background and from the results of the research, the following policy recommendations are made:

- i) Training and workshop programmes, especially in areas of production, farm risk management, marketing, and waste management, should be organised by government and corporate financial institutions to encourage participation in credit markets so that the abundant available funds can be efficiently utilised in the production process.
- ii) Credit institutions should give due consideration to policy conditions as more favourable terms and interest rates during policy formulation make it easier to get a loan while maintaining mutual benefit between farmers and the institutions.

## R References

- Adeoye, I.D., Seini, W., Sarpong, D.B., Amegashie, D. (2020). Off-farm income diversification among rural households in Nigeria. *Agricultura Tropica et Subtropica*, 52(3-4), 149-156.
- Agbola, F.W., Ogunniyi, A.I., Omotoso, B.A. (2022). Determinants of farmers' access to informal credit in Nigeria. *Agricultural Finance Review*, 82(2), 223-239.
- Ajayi, O., Ogunniyi, L.T., Ojo, O.O. (2019). Determinants of credit demand and supply in Nigeria: An empirical analysis. *Journal of Economics and Sustainable Development*, 10(3), 166-174.
- Alemayehu, M., Mekonnen, D.A., Zerfu, D. (2020). Determinants of farmers' participation in informal credit markets in Ethiopia. *African Journal of Agricultural and Resource Economics*, 15(3), 332-347.
- Ali, M.Y., Sarker, M.A. (2018). Determinants of farmers' demand for credit and its impact on rice production in Bangladesh. *Journal of Agricultural Economics and Development*, 7(1), 1-13.
- Anosike, F.U., Rekwot, G.Z., Owoshagba, O.B., Ahmed, S., Atiku, J.A. (2018). Challenges of poultry production in Nigeria: A review. *Nigeria Journal of Animal Production*, 45(1), 252-258.
- Asenath, S., Yiorgos, G. (2020). Credit sources, access and factors influencing credit demand among rural livestock farmers in Nigeria. *Agricultural Finance Review*, 80 (1), 68-90. doi: <https://doi.org/10.1108/AFR-10-2018-0090> Available at <https://centaur.reading.ac.uk/85405/>.
- Asfaw, S., Shiferaw, B., Simtowe, F. (2021). The impact of mobile phone-based information and credit on farmers' access to finance in Ethiopia. *World Development*, 146, 105588.
- Assogba, P.N., Kokoye, S.E.H., Yebemey, R.N., Djenontin, J.A., Tassou, Z., Pardoe, J., Yabi, J.A. (2017). Determinants of credit access by smallholder farmers in North-East Benin. *Journal of Development and Agricultural Economics*, 9 (8), 210-21. Doi:10.5897/JDAE2017.0814.
- Balana, B.B., Mekonnen, D., Haile, B., Hagos, F., Yimam, S., Ringler, C. (2022). Demand and supply constraints of credit in smallholder farming: Evidence from Ethiopia and Tanzania. *World Development* 159, 106033.
- Bassey, J.I., Nzeakor, F.C. (2019). Assessment of women participation in Cross River Commercial Agriculture Development Project, Cross River State, Nigeria. *Journal of Agricultural Economics, Extension and Science*, 5(1), 29-40.
- Birungi, P., Hassan, R.M., Edriss, A. (2018). Determinants of farmers' participation in formal and informal credit markets in Uganda. *Agricultural Finance Review*, 78(3), 378-396.
- Central bank of Nigeria (2017). Annual report. p. 268.
- Chandio, A.A., Jiang, Y., Rehman, A., Twumasi, M.A., Pathan, A.G., Mohsin, M. (2021). Determinants of demand for credit by smallholder farmers': a farm level analysis based on survey in Sindh. *Pakistan. Journal of Asian Business Studies*, 28(3), 225-240.
- Doss, C., Grown, C., Deere, C.D. (2018). Gender and asset ownership: A guide to collecting individual-level data. Oxford University Press.
- Duru, I.P. (2021). Challenges and prospects of poultry production in Nigeria. *Nigerian Journal of Agriculture, Food and Environment*, 17(3), 25-33.

- Egbo, B.N., Oguche, P., Ikehi, M.E. (2021). Informal sources of agricultural credit available among rural farmers in Ofu Local Government Area of Kogi State in Nigeria. *Journal of Research in Agriculture and Animal Science*, 8(3), 6-10.
- Greene, W.H. (2012). *Econometric Analysis* (7th ed.), Prentice Hall, Upper Saddle River.
- Karimov, A., van Dijk, M., Djanibekov, N. (2020). Determinants of farm households' access to formal credit in Tajikistan. *Agricultural Finance Review*, 80(1), 85-109.
- Kumar, A., Mishra, A.K., Saroj, S., Joshi, P.K. (2017). Institutional versus non-institutional credit to agricultural households in India: Evidence on impact from a national farmers' survey. *Economic Systems*, 41(3), 420-432, DOI: 10.1016/j.ecosys.2016.10.005
- Masaki, M.N., Lee, I., Duns, H., Toromade, F., Ayo, O. (2020). Poultry Sector Study Nigeria. Ministry of Foreign Affairs by Netherlands Enterprise Agency, pp. 50.
- Mishra, S., Kumar, P., Saroj, S. (2019). Determinants of credit demand among smallholder farmers in India. *Journal of Rural Studies*, 65, 94-104.
- McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics* (pp. 105-142). Academic Press.
- Mohammed, B.S. (2015). Economic Impact of Poultry Production in Katsina State, Nigeria. A Master of Science (Economics) Thesis submitted to the Department of Management, Faculty of Finance and Administrative Sciences, Al-Madinah International University, Malaysia.
- Murendo, C., Wollni, M., de Brauw, A. (2020). Determinants and impacts of smallholder farmer participation in rural credit markets in Zimbabwe. *Agricultural Finance Review*, 80(2), 227-247.
- Mwongo, L.A., Naho, A. (2021). Determinants of credit demand by smallholder farmers in Morogoro, Tanzania. *African Journal of Agricultural Research*, 17(8), 1068-1080. DOI:10.5897/AJAR2020.15382.
- Ogunleye, A.O., Omotosho, O.A., Olagunju, F.I. (2021). Determinants of credit access and its impact on output of smallholder farmers in Nigeria: Evidence from the Nigeria General Household Survey. *African Development Review*, 33(1), 102-116.
- Ogunniyi, A.I., Agbola, F.W. (2022). Determinants of farmers' access to informal credit in Nigeria. *Agricultural Finance Review*, 82(2), 223-239.
- Ogunniyi, L.T., Ajayi, O., Ojo, O.O. (2022). Credit demand, determinants, and constraints among smallholder farmers in Nigeria. *Journal of Agricultural and Food Economics*, 9(1), 1-20.
- Oluwatayo, I.B. (2020). Determinants of credit access and utilization by smallholder farmers in Nigeria. *International Journal of Management*, 11(1), 196-209.
- Olouch-Kosura W.A., Marenja Phiri P., Nzuma M.J. (2001). Soil Fertility Management in Maize-based production systems in Kenya: Current options and future strategies. Seventh Eastern and Southern Africa Regional Maize Conference 11th-15th february, 2001 pp. 350-355.
- Osei, R.D., Osei-Agyeman, M., Adjei-Nsiah, S. (2019). Determinants of credit demand among cocoa farmers in the Ashanti Region of Ghana. *Agricultural Finance Review*, 79(1), 114-132.
- Osuntade, O.B., Babalola, D.A. (2021). Credit access and faecal management practices among poultry farmers in Ogun State, Nigeria: implications for climate change. *Journal of Tropical Agriculture, Food, Environment and Extension*, 20(2), 57-61.
- Rahman, S., Rahman, A., Islam, M.A. (2023). The role of digital finance in enhancing farmers' access to formal credit: Evidence from Bangladesh. *Information Technology for Development*, 29(1), 19-38.
- Taremwa, N.K., Macharia, I., Bett, E., Majiwa, E. (2022). Determinants of access to agricultural credit among smallholder rice and maize farmers in the Eastern and Western provinces of Rwanda. *Journal of Tropical Agriculture, Food, Environment and Extension*, 21(2), 1-11.
- Train, K. (2009). *Discrete Choice Methods with Simulation* (2nd ed.). Cambridge University Press.
- Waje, S.S. (2020). Determinants of Access to Formal Credit in Rural Areas of Ethiopia: Case Study of Smallholder Households in BolosoBombe District, Wolaita Zone, Ethiopia. *Economics*, 9(2), 40-48. doi: 10.11648/j.eco.20200902.13.

For citation:

Ukpe U.H., Ewung B.F. (2023). Determinants of Demand and Participation by Poultry Farmers in Formal and Informal Credit Markets in Cross River State, Nigeria. *Problems of World Agriculture*, 23(4), 31-43; DOI: 10.22630/PRS.2023.23.4.15