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Analysis of Small-scale Farmer's Access to Formal Financial Services in Cross River State, Nigeria

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This study was carried out to analyze small-scale farmers' access to formal financial services in Cross River State, Nigeria. The specific objectives were to describe the types of formal financial services available to these farmers, assess the extent of utilization of these services by the farmers, determine the influence of selected socio-economic variables on the use of formal financial services and analyze the correlation between access to financial services and small-scale farmers output. A simple random sampling technique was used to select the respondents using well-structured questionnaire. Logistic regression and descriptive statistical tools were used to analyze data gathered. The results indicated that formal, semi-formal and informal financial service providers are available to the farmers. Majority of the farmers, 72% used 1-5 financial services. The binary logistic regression results revealed that age, farm experience, distance, educational level, farm size, cost of access and farm income were the major factors affecting farmers' access to financial services. The study also showed that the degree of correlation between use of financial services and farmers output was 25%. The study recommends that formal financial services providers should expand their scope of coverage, enlighten the farmers on how to access and use these formal financial services as well as timely disbursement of funds to suit farming operations for the small-scale farmers to encourage better utilization and optimum output.

Keywords: Small Scale, Access, Formal, Financial Farmers, Cross River.

INTRODUCTION

Agriculture is a major contributor to Nigeria's Gross Domestic Product (GDP) and small-scale farmers play a dominant role towards this contribution. Agriculture according to Rahji and Fakayode (2009) and Odife (2002), provides between 80 – 90% of the country's food needs. In Nigeria, 70 – 80% of the population lives in the rural area and a vast majority of this population totally depends on agriculture for their livelihood (Ezeugo, 1998). Agricultural growth, therefore, is the only panacea to the problem of hunger, food insecurity and development.

The agricultural sector contributed over 60% of the GDP in the 1960s and despite the belief of Nigeria's peasant farmers on traditional tools and indigenous farming methods, these farmers produced 70% of the country's exports (Lawal 1992). The agricultural sector now accounts for less than 5% of Nigeria's GDP (Olabaju and Fatola, 1996). In addition, natural factors such as erosion, lack of improved soil conservation system, inadequate provision of extension officers and bad roads affect rural farmers negatively, Enimu, Edet and Ofem (2016). Unfortunately, despite the enormous contributions of agriculture to the Nigerian economy over the years, the sector has slipped into a systemic decline, particularly in the past three decades since the petroleum industry replaced the sector as the main earner of Government revenue and foreign

exchange earnings (FGN, 2008). Government intervention has also motivated the implementation of some special agricultural projects whose success depends on the administration of credit facilities to the small-scale farmers for whom the project was designed (Osakwe and Ojo, 1984). Still, the inability of farmers to reach out for improved farm materials for example fertilizer, updated tools, agro-chemicals consequently has contributed to low farm output (Okon, Nsikakabasi and Offiong, 2012).

With climate change threatening agricultural output and a population estimated to grow by an extra 2.5 million by 2050 even multinational food corporations depends on sustainable small-scale farmers to ensure their supply of raw materials: if small-scale farmers are to play a role in meeting the increasing demand for food, they should be provided with the means to do so. Rooijakker (2010), explained that money for farming does not mean access to credit but also access to other financial product and services such as branchless banking and insurance. The finance industry encompasses a broad range of organizations that deal with the management of money. Among these organizations are the banks, credit card companies, insurance companies, stock broking firms, consumer finance companies, money lenders, and some government-sponsored enterprises.

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Financial services included the following intermediation which involves mobilizing and transferring savings from surplus to deficit units and provide safe, higher and convenient savings (deposit) facilities and access to credit facilities to the needs of the urban and rural population. Savings facilities which allow wealth to be kept in a form that preserves its value and its liquid and readily assessable systems for effective payments and transfer or remittances, credit for consumption and investment in agricultural production, marketing, processing and input supplies, general insurance and cover against variability in output price and market uncertainty.

Unfortunately, over the years, several studies have shown that farmers patronize informal sources more than formal sources. However, these informal sources have not increased their farm sizes and structure over the years (Enimu et. al. 2017). While Eyo and Enimu 2015), opined that formal sources can improve production, give cheaper loans on a longer duration and larger loans and now is made more convenient with the introduction of microcredit.

The problem is that the small-scale farmers are still unable to access these services and the financial service providers have not tailored these numerous services to suit the demand of these small-scale farmers. The questions are: what are the financial services provided, who are these financial services providers, what is the extent of use of these financial services by farmers, what are the factors influencing access to these financial services, how has the use of these financial services affected farm output and how do we improve access to financial services to improve production and producer income in Cross River State, Nigeria?

OBJECTIVE THE STUDY

The general objective of this study is to analyze small-scale farmers' access to formal financial services in Cross River State, Nigeria.

The specific objectives are to:

- Assess the types of formal financial services available to small-scale farmers in Cross River State.
- Ascertain the extent of utilization of these services among livestock and crop farmers.
- Determine the influence of selected variables on the use of formal financial services by small-scale farmers, and
- Determine the relationship between access to formal financial services and small-scale farmers output.

RESEARCH HYPOTHESIS

The following null hypotheses were tested.

- Socio-economic characteristics of the farmers and other related issues do not have any significant effects on small-scale farmer's access to formal financial services, and
- There is no significant relationship between output and small-scale farmers' access to formal financial services.

METHODS

Study Area

The study area was Cross River State; one of the 36 states in Nigeria tagged "The People Paradise." It is a coastal state situated in the Niger Delta region of the South-South geopolitical zone of the country. The state occupies an area of about 23,07459km and a population of 2.8million (NPC, 2006). Cross River State shares common boundaries with Benue to the north, Ebonyi and Abia State to the west, Cameroon Republic to the east, Akwa-Ibom and the Atlantic Ocean in the south. Cross River State lies within latitude 5^032^1 and 4^027^1 North and longitude 7^050^1 and 9^021^1 east.

The state has two distinct wet and dry seasons with an average temperature ranging between $17 - 30^0C$ and the annual rainfall ranging between 1300-1800m (Enimu, Edet and Ofem, 2016). However, Cross River has a moderate temperate climate within the high plateau of Obudu with temperatures between 4^0C and 10^0C. The vegetation spans from mangrove swamp and rainforest in the south to derived savanna in the north. The vegetation and climate are therefore very diverse and so are the crops grown. There are lots of natural resources and great tourism potentials that have attracted both local and international attention.

Fishing and subsistence agriculture are the main occupations of the people. The crops grown by the farmers in the state include rice, yam, plantain, cassava, maize, banana, melon, pumpkin, pepper, waterleaf, cocoa, oil palm, rubber etc. within the state, livestock such as poultry, goats, rabbits, pigs, cattle, sheep and turkey are reared with artisanal fish farmers in abundance.

Data Source

This study was both primary and secondary data. Primary data was obtained through a well-structured questionnaire, complemented by an oral interview by fully trained enumerators to elicit information on the socio-economic characteristics of small-scale farmers, their credit needs and utilization. Secondary data were obtained from relevant research publication conference papers, journals and the internet.

Sampling Procedure and Data Analysis

The sample population is made up of small-scale farmers, identified and registered with the Agricultural Development Project (ADP) in conjunction with the government agricultural transformation agenda. Simple random sampling procedure was used in the sample selection. A total of two hundred and fifty-two (252), consisting of one hundred and fifty-one (151) crops and one hundred and one (101) livestock small-scale farmers were randomly selected based on the proportionate sampling method from sixteen (16) local government areas of the state. The data analysis included descriptive and inferential statistics such as mean, percentage, logistic regression and correlation analysis.

The Empirical Model

The observations on the dependent variable (y) of this model can be viewed as dichotomous that is, having a value of one (1) if the small-scale farmers access financial services and zero (0), if otherwise. A logit model is used because its

underlying assumptions are less restrictive than those of other methods (Gujarati, 2004). Also, it is free of the problems attendant with the use of Ordinary Least Squares (OLS). In the logit model, it is assumed that the use of financial services is a log-linear function of the exogenous variables X_1 X_n of the form.

$$L_1 = I_n \left(\frac{P_i}{1 - P_i} \right) = Z_i = B_o + B_1 + B_1X_1 + B_2X_2 \ldots B_nX_n$$

That is L; the log of the odds ratio is not only linear in X_i but also linear in the parameters.

Where L = Logit / Logit model
    P = is the probability of using financial services;

$$P = \frac{1}{1 + e^{-z}} = \frac{e^z}{1+e^z}$$

Where $Z = B_0 + B_1X_1 = B_2X_2 \ldots B_nX_n$

Therefore, the probability of not using the financial services is;

$$1 - P = \frac{1}{1 + e^{-z}}, \qquad \frac{P}{1 - P} = \frac{1+e^z}{1+e^{-z}} = e^z$$

Now, P/(1-P) is simply the odds ratio in favour of using financial services, that is, the ratio of the probability that the farmer will access financial services to the probability that he will not. Thus, if P = 0.8, it means that odds are 0 to 1 in favour of using financial services. Therefore, if P goes from 0 to 1 (that is, as z varies from $-x_1$ to $+x$), the logit, L, goes from $-x$ to $+x$. That is, although the probability lies between 0 and 1, the logit is not so bounded.

For estimation purpose, we write the explicit form as follows:

$$L_1 = \left(\frac{P_i}{1 - P_i} \right) = Z_i = b_o + b_1 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5 X_5 + b_6X_6 + b_6X_6 + b_+X_7 + b_8X_8 + b_9X_9 + ut$$

Where

    Y = Dependent variable (measured in binary term)
    b_i-b_n= coefficients of independent variables
    b_o= Intercept
    X_i= Age of farmers in years
    X_2 = Sex (Dummy: 1 = male, 0 otherwise)
    X_3 = Education index
    X_4 = Farm experience in years
    X_5 = Farm size in ha, for crops and herd size for animals
    X_6 = Number of financial services providers available
    X_7 = Cost of access to available financial services (Naira)
    X_8 = Distance to available financial services in Km
    X_2 = Income from farm output (Naira)
    Ut = stochastic error term.

RESULTS AND DISCUSSION

Types of Financial Services Provider Available to Farmers

Table 1 showed the types of financial services providers available to small-scale farmers in the study area. The majority 96.0% of the small-scale farmers access their funds from cooperative societies, while 91.3% access credit from Osusu groups. Moreover, 87.7% of the farmers access credit from their family members, while 72.2% secure funds from microfinance banks. About 61.1%, 51.9%, 44% and 34.9% of the small-scale farmers access their funds from Non-governmental organizations, money lenders, bank of agriculture and commercial banks respectively, while 29.8% access funds from other financial services providers. From the study, it could be concluded that majority of the small-scale farmers secure their credit mainly from the informal and semi-formal financial service providers even as the formal financial service providers still provide minor credit service to the small-scale farmers in the study area.

Extent of Use of Financial Services

Table 2 revealed the extent of use of financial services by small-scale farmers. The study showed that the small-scale farmers deposit their savings mobilized with the financial services providers with the aim of securing credit for farming operations and other financial services that are made available to them. On the number of financial services used, the table indicated that 72% of the small-scale farmers use 1–5 financial service providers, while 18.3% use 6–10 service providers. Moreover, only 9.5% of the respondents use 11–15 financial service providers.

Effects of Selected Variables on the Use of Formal Financial Services by Small Scale Farmers.

The binary logit regression model was used to identify variables pushing or pulling small-scale farmers access to formal financial services, that is, the likelihood of accessing formal financial services. The regression classification table revealed that the binary logistic model managed to predict 89.3% of the responses correctly. The model fits the data at (P<0.001) as indicated by the chi-square goodness of fit statistic (62.38).

The good fit of the model proved that the variables tested in this study were valid to explain the determinants of access to formal financial services by small-scale farmers in the study area. Besides, the Nagelkerte R^2 value (0.725) shows that about 72% of the outcome (likelihood of access to formal financial services) can be explained by the selected independent variables captured in the model.

Seven of the nine parameters included in the model were statistically significant. These parameters include age of small-scale farmers, educational level, farming experience, farm size, cost of accessing financial services, distance to credit sources and farm income.

A negative and significant relationship was found between age of farmers and the likelihood of accessing formal financial services. This indicated that younger farmers possess the likelihood of accessing formal financial services compared to their older counterpart.

Table 1: Types of Financial Services Providers in Farmers Locality

Types of Services Provider	Frequency	Percentage
Co-operative Societies	242	96.0
Osusu Groups	230	91.3
Relatives	221	87.7
Microfinance Banks	182	72.2
Non-governmental Organization	154	61.1
Money Lenders	131	51.9
Bank of Agriculture	111	44.0
Commercial Banks	88	34.9
Others	75	29.8
Total	**252**	**100**

Source: Field survey, 2017
(Multiple choice responses recorded).

Table 2: Extent of Use of Financial Services by Farmers

Number of Financial Services used	Frequency	Percentage
1 – 5	182	72.2
6 – 10	46	18.3
11 – 15	24	9.5
Total	**252**	**100**

Source: Field survey, 2017

Table 3: Estimates of the Logit Regression Model for Determinants of Access to Formal Financial Services

Variables	Coefficients	P-value	Exponential- B	Standard error
Age	-8.5547[xx]	0.012	0.947	0.119
Sex	-11.4540	0.234	0.234	4.797
Education	9.1615[xxx]	0.004	1.175	0.058
Farm Experience	1.2508[xx]	0.013	1.052	0.010
Farm Size	-3.1097[xx]	0.028	0.896	0.167
No. of Formal Financial Services	-2.1834	0.164	0.113	2.187
Cost of Access	7.4232[x]	0.069	1.000	0.029
Distance	2.3959[xxx]	0.032	4.039	0.621
Farm Income	-65237[xxx]	0.005	1.101	0.003
Constant	5.2108[xx]	0.026	0.324	4.798

Source: Computed from field survey, 2017.
Percentage prediction = 89.3%, Goodness of fit chi-square (df=11) = 62.38% (P<0.001), Negelkerte R^2 = 0.725[x, xx, xxx] represents significant at P< 0.1, P<0.05 and P<0.01 respectively.

Table 4: Correlation between Output and Use of Financial Services

Variables	Degree of Correlation
Crop Farmers	0.35336
Livestock farmers	0.1763
All Respondents	0.2459

This study is in conformity to *a priori* expectations and parallel work by Enimu, Eyo and Edet (2017), who stated that younger group members have the propensity of securing loans from microfinance institutions and they also have the moral courage of undertaken risky ventures than older farmers.

There was a positive and significant relationship between access to formal financial institutions and the small-scale farmer's level of education. This implies that, the higher the educational level, the higher access to formal financial services. This is in conformity to *a priori* expectations and also agrees with work by Enimu and Ohen (2017), Olomola (2002) and Rweyemanu, Kimaro and Urassa (2003).

The coefficient of farming experience was significant at 5% and positively related to farmers' access to formal financial services. This is in conformity to *a priori* expectations and work

by Okorji and Mejeha (1993) who opined that farming experience positively relates to access of formal financial services by small-scale farmers, as the experienced farmers had a better understanding of credit availability and the procedure required in accessing such financial services.

There was a negative and significant relationship between farm size and the likelihood of access to formal financial services in the study area. This implies that as the farm size of the small-scale farmers increases, access to formal financial services decreases. This is against *a priori* expectations which denote a positive relationship between farm size and accessibility to formal financial services as farm size can help to leverage on the security required by formal financial institution before given out loans.

The coefficient of cost of access to formal financial services was significant at 10% level and negatively related to access of small-scale farmers to formal financial services. This indicates that as the cost of accessing formal financial services increases, small-scale farmer's access to formal financial services decreases. This conforms to *a priori* expectations and also agrees with results from Okpukpara (2005) who noted that cost of accessing financial services by farmers is a disincentive which discourages farmer from securing loans from formal financial institutions.

The coefficient of distance traveled was significant at 5% level and negatively related to access of formal financial services. This indicates that distance negatively affect access to formal financial services by small-scale farmers. This parallels *a priori* expectations and conforms to Aryeety and Udry (1997) who opined that distance affect the volume of credit received by microcredit groups, while Enimu and Ohen (2017) stressed that distance determine accessibility, as it has a negative effect on savings and credit delivery which are major factors in the rural financial market.

The amount of farm income had a positive coefficient, and is significant at 1% level, suggesting an increase in access to formal financial services as the farm income increases. This conforms to *a priori* expectations which state that higher farm income would encourage the propensity to save which in turn facilitates credit accessibility. This also mirrors work by Igben and Enimu (2016), Eyo (2008) and Adam (1992).

Correlation between Access to Financial Services and Output.

It is assumed that access to financial services by small-scale farmers will in no small measure help to increase their farming operations thereby improving output and income. The value of output in naira was used to determine if there is any correlation between access to financial services and output.

Table 4 indicates that for crop farmers, the degree of correlation was 0.35336 which implies that there is about 35% level of correlation between access to financial services and farm output, while livestock farmers had 0.1763 indicating 18% level of correlation, for all the farmers, the degree of correlation was 0.2459 implying a 24% level of relationship between access to financial services and small-scale farmers' output. This relatively low level of correlation may not be unconnected with inadequate understanding of the financial services obligation and operations as the timing of loan disbursement may not suit farming operations coupled with strangulating interest rates and other conditions.

CONCLUSION AND RECOMMENDATIONS

The study focused on the analysis of small-scale farmers' access to formal financial services in Cross River State, Nigeria. The major conclusions derived from the study were that formal, semi-formal and informal sources of finance were available to small-scale farmers in the study area, with majority of the farmers 72% using 1–5 financial services providers.

The result of the binary logit regression model indicates that seven of the nine parameters included were statistically significant as factors affecting access to formal financial services by small-scale farmers which include, age, education level, farm experience, farm size, cost of accessing financial services, distance to source of credit/services, and farm income.

The result also indicated that there is a 25% correlation between access to formal financial services and farmers output. It is therefore recommended that financial services providers should expand their scope of coverage and also enlighten the farmers through appropriate mass media on how to access and use these financial services, financial service providers need to change their perception about agricultural business and support small-scale farm business by improving on their transaction's turnaround time and banking reforms such that the financial inclusion strategy should be channeled more to the un-banked farmers with flexible and timely release of funds/services to target business gestation periods.

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CONFLICT OF INTEREST

We declared that there is no conflicting interest whatsoever. It is a group project jointly carried out by both authors.

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