



Factors Influencing Credits Access among Small Scale Fish Farmers in Adamawa State, Nigeria

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ABSTRACT

The Study analyzed factors influencing credits access among small scale fish farmers in Adamawa State, Nigeria. Primary data on access to credits in the study area were collected from 150 respondents who were sampled using purposive and snowball technique from the study area. The data were analyzed using descriptive statistics, linear probability model and ranking. The result revealed that the coefficients of linear probability model indicate a high R²-value (0.89) and F-Value was significant at 1% (103.285). Interest rate, farm insurance, payments period, age and subsidy were the positive and significant coefficients, while those of collateral on loan, installment of payment and formalities were negative and significant. The results also indicated that the major problems hindering access to credit were amount acquired, formalities involved and lack of collateral. It is recommended that agricultural lending institutions should be strengthened for the improvement in fish production, motivation of fish farmers and policy formulation in Adamawa State and Nigeria at large.

Key words: Credit, Access, Linear Probability, Fish, Farmers

INTRODUCTION

The World Bank (1996) opined that credit is necessary for small-scale farmers to increase their agricultural productivity and farm income; however their access to institutional credit is curtailed. Credit has done a thousand times more to enrich mankind than the gold mines in the world. However, mere recognition of credit as a condition for agricultural growth is not sufficient to guarantee increase in agricultural productivity and farm income. Modernizing agriculture requires large infusion of credit to finance the use of purchased inputs such as fertilizers, improved seeds varieties, herbicides, insecticides, animal feeds, and additional labour among others. In this regard, the provision of agricultural credit can be a powerful economic tool for development, if used to inject appropriate capital for the purchase of agricultural inputs that are not otherwise available to farmers from their own financial, physical and labour resources. To date however, institutional supply of agricultural credit remains inadequate; and this continues to impede the transfer of technology and investment into agriculture (Olagunju and Ajiboye, 2010). Osuntogun (1980) holds the view that unless production credit is made available on suitable terms, the majority of the small farmers will be seriously handicapped in adopting profitable technology. According to Ijere (1986), credit is a catalyst which drives the machinery of production to optimum performance. McNamara (1975) is of the opinion that access to credit is crucial to small scale farmers operations, no matter how realistic and essential the land reform. A well-motivated farmer without credit cannot buy inputs such as improved seeds, fertilizer, animal feeds and chemicals. Hence the small scale farmer generally spend less than 20 percent of what is required on such items, because they do not have access to credits facilities.

Mbata (1991) opined that credit is pertinent to increase efficiency required by the small scale farmers. Harsch (1994) also, noted that farmers in Africa have demonstrated that when given the opportunity to earn higher incomes they can be dynamic producers. Kitbur (1990) submitted that modernization of agriculture demands increased use of modern inputs which consequently increase the demand for credit. Galbraith (1952) contends that at a certain stage of agricultural development, agricultural credit clearly does not become a strong force for further improvement when a man with energy and initiative who lacks only resource for more and efficient production is enable by use of credit to eliminate the one block on his path to improvement and this is consistent with the views of Taylor *et al.* (1986). Perhaps the best known criticism of the effectiveness of providing credit to the small-scale farmers is attributed to Shultz (1964), who's poor but efficient hypothesis states, that the provision of agricultural credit will be ineffective in improving productivity and income, since investment is limited. Traditional farmers he hypothesized to be efficient but faced with technological barriers that cannot be overcome by the mere influx of capital provided by credit programmes alone. This view does not discountenance the necessity of agricultural credit for the improvement of the productivity of small-scale farmers, but rather stresses the need a combination of credit with other technological packages in order to increase production and income of the small scale farmers.

Small scale farmers have always played dominant role in agricultural productivity in Nigeria (Rahji and Fakayode, 2000), but their productivity and growth are hindered by limited access to credit facilities (Odoemenem and Obinne, 2010). Farm credit is an important factor in improving agricultural productivity and strengthening rural economy in most developing countries. Farm credit scheme provide poor people with the institutional support needed to generate a source of income which may help them to achieve food security. Several empirical studies have shown that micro credit have benefited small scale farmers in many ways in the past (Feijo, 2001; Oyeyinka and Bolarinwa, 2009 and Okojie *et al.*, 2010). The operational mechanism of farm credit services is complicated by emerging new challenges that are changing the context in which rural economic landscape operates. Important lessons from past rural credit programme in the country point to the need to redesign or improve delivery mechanism to minimize institutional barriers and, hence, open access of small-scale farmers to credit. Majority of poor farmers have continued to face limited access to financial services, and where these services are made available, they are often at very high cost (Okojie *et al.*, 2010). Capital has for a long time been considered as a primary means of rekindling and enhancing the growth potential of the rural economy, especially agricultural activities (Eboreime, 2008). Some scholars believed that a sure way of breaking the vicious circle of poverty especially in the rural areas is through the injection of capital (Jhingan, 1975). Eboreime (1999) found that the provision of financial capital to small scale rural farmers actually led to output growth and increase in gross incomes. Eboreime further observed that the trend can effectively checkmate poverty as increased income is expected to generate increased saving, investment, and capital formation and eventually bring about increased productivity. Agricultural credit determines access to all of the resources on which farmers depend (Shephard, 1979). Credit serves as a source of funds to farmers that can be utilized in the production process (Awotodunbo, 2008). Ogundeji (1998) stated that agricultural business like any other business can be financed through personal savings, friends or family assistance, partnership, bank loans, private placements, credit terms, hire purchase and cooperative societies. In Nigeria, it is estimated that only 2.5 percent of the total commercial Bank loans and advances is directed to agriculture (CBN, 2008). Government dependent financial intitutions are handicapped by severe financial, political and managerial problems to the points of incapacitation (Eboreime, 2008). Eboreime further observed that the delivery systems suffer serious obstacles of implementation, resulting in facilities being uncompleted or lacking staff and equipment. Most of the problems have being attributed to the non-involvement of the people in the planning and execution process of the scheme. This is also exacerbated by the politicization of resource allocation and non accountability by government staff of the resources which they control.

Many reasons have been advanced for the declining agricultural productivity in Nigeria. One of the major factors attributed to the declining productivity of the sector is farmers' limited access to credit facilities (Nwaru, 2004 and Manyong *et al.*, 2005). Increase productivity depends on adoption and technical efficiency of improved farming technologies (Obwona, 2002). In an effort to increase adoption rate among farmers, their purchasing power to acquire modern agricultural technologies should be improved. Most of the Nigerian farmers are smallholders, trapped in vicious cycle of poverty. It has been argued that when agricultural credits are made accessible to farmers, it will go a long way in breaking this cycle of poverty and liberating the farmers to improve their adoption of modern farm technologies which could enhance productivity and farmers' income. Adebayo and Adeola (2008) observed that agricultural credit enhances productivity and promotes standard of living by breaking vicious cycle of poverty of the resource poor farmers. Similarly, Nwaru *et al.*, (2006) observed that credit facilitates adoption of innovations leading to increased farm productivity and income, encourages capital formation and improves marketing efficiency. There are two major sources of agricultural credit (that is, formal and informal sources). In the formal credit, institutions provide intermediation between depositors and lenders charge relatively low rates of interest that usually are government subsidized. In informal credit markets money is lent by private individuals. The informal sources of credit to smallholder farmers as identified in the study area were family/friends, money lenders, produce buyers and farmers' cooperatives, while the formal sources of credit were Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) now known as Bank of Agriculture (BOA) and Commercial Banks. The Nigeria Agricultural and Cooperative Bank Limited was established in 1972. The NACRDB evolved recently from the merger of the Nigerian Agricultural and Co-operative Bank with the People's Bank. The bank's broad mandate encompasses savings mobilization and timely delivery of affordable credit to meet the funding requests of the teeming Nigerian population in the agricultural sector of the economy. But this has not been the case with smallholder farmers as the problem of accessibility hinders them from reaching formal financial institutions for production loans (Etonihu, 2010).

Nigeria is one of the largest importers of fish with official records indicating 560,000 metric tonnes annually, Nigeria must work to substitute fish imports with domestic production to create jobs, reduce, poverty in rural areas where 70% of population lives and ease the balance of payments. Nigerians are high fish consumers; demand for fish is estimated at 1.55 million tones. Domestic fish production stand at 511,000 metric tonnes and fish importation is about 560,000 metric tonnes which cost more than ₦30 billion (Amiengheme, 2003).

Nigeria spends ₦100 billion on fish importation annually and the current fish demand in Nigeria stands at over 2.66 million tonnes per annum, while the present importation rate is over 750,000 metric tonnes (Oota, 2012). With importation of more than 750,000 metric tonnes of fish, more than USD 600 million are spent in hard currency and thousands of jobs are exported (USAID, 2010). The continuous importation of fish portends a colossal loss of foreign exchange earnings to Nigeria. In order to bridge the demand-supply gap, an aquaculture transformation agenda plans to increase annual fish production from the current production of 0.78 million tonnes to 3.0 million tonnes in order to achieve self-sufficiency in fish production and supply by the year 2015 (Tijani, 2011). This will be achieved through fish farm development programme, providing credits facilities to fish farmers, fish seeds and feed mill development programme, fish pen and cage culture development programme and fish post-harvest management and marketing programme.

Dismal aquaculture production coupled with declining catches of indigenous fish species has increased the gap between supply and demand of fish in developing countries. Therefore, the supply

of fish and fishery products in Nigeria at large is declining compared to the demand (Abila, 2003). To this end, the study is aimed at analyzing the factors associated with accessing credits among fish farmers in the study area as well as examining the problems associated with fish farming in the study area.

METHODOLOGY

The study was conducted in Adamawa State, Nigeria. The study area lies between Latitudes 7⁰ and 11⁰ North of the Equator and between Longitudes 11⁰ and 14⁰ East of the GMT. The wet season commences in late April and ends in late October, while the dry season starts in November and ends in April. The mean annual rainfall of the area is about 1000mm (Adebayo, 1999). The study area falls within the Northern Guinea Savannah Zone with 21 administrative local government areas, land mass of 2,310.05km² and a population of 3,178,950 (NPC, 2006). The area is bounded by Taraba State to the south, Gombe State to the west, Borno State to the north and Cameroun Republic to the east.

The major occupation of the people is crop farming, animal rearing and fishing activities. There are a lot of fishing activities in the study area as one of the major rivers in Nigeria (River Benue) links through the state with some major water reserves (Kiri, Njuwa, Churchill, Yinagu, Chachelek and Gerio) located within the study area, it also have two large commercial farms (Gessedaddo and Sabore) located within the state, where fish are harvested on relatively large scale. The peak period of fish harvest from natural water bodies is in August-October while in April-May it drops to its lowest in which the dams occasionally open at this time for fish capture. Major species of fish around the area are Catfish and Tilapia. The fish are mostly harvested using fishing gears (nets and hooks). Most small scale fish-farmers harness period of low fish output from the natural (capture) source for their harvest.

Data for this study were derived mainly from primary source collected with the use of structured questionnaire. Snowball sampling technique, that is using the contacted respondents to identify subsequent respondents, this was used to contact 220 respondents for this analysis. The data was collected from across the state, but most of the data were purposively collected from the urban and peri-urban areas of Mubi, Michika, Yola, Mayo-Belwa, Numan, Ganye and Guyuk because they have more fish farms. The analytical tools that were used in this study were descriptive statistic, linear probability model and ranking.

The linear probability model

Linear Probability Model (LPM) was employed to analyze the factors affecting access to capital in the study area. It is a typical of linear regression model but because the regressand (Y) is dichotomous, it is called LPM. This is because the conditional expectation of Y_i given X_i, E (Y_i|X_i), can be interpreted as the conditional probability that the respondents access credits or not, given X_i, that is, Pr (Y_i = 1|x_i). The justification of the name LPM for model can be seen as follows: Assuming E (u_i) = 0, as usual (to obtain unbiased estimators), we obtain:

$$E (Y_i|X_i) = \beta_1 + \beta_2 X_i \dots\dots\dots(1)$$

Thus showing that, if P_i = probability that Y_i=1(that is, the respondents access to credits) and (1-P_i) = probability that Y_i = 0 (that is, the respondents do not have access to credits) Gujarati and Porter (2009). The empirical model that was used in analyzing respondents' access to credits is specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + u_i \dots\dots(2)$$

Where:

Y = P_i or (1- P_i) value between 0 and 1(Access Credits=1, No Access to Credits=0)

X₁ = Amount of Capital Acquired (₦)

X_2 = Interest Rate on Capital (%)

X_3 = Insurance on Fish Farm (dummy = 1 if insured and 0 otherwise)

X_4 = Literacy level of the respondent (Number; 0= no formal education, 1= primary education, 2=secondary education and 3= tertiary education)

X_5 = Collateral for collecting Credit (dummy = 1 if tendered collateral and 0 otherwise)

X_6 = Period of Payment of Credits (Months)

X_7 = Installments of Payment of Credits (Number)

X_8 = Gender of respondents (Male = 1 and Female = 0)

X_9 = Age of respondents (Years)

X_{10} = Formalities in occurring Credits (dummy = 1 if there are formalities and 0 otherwise)

X_{11} = Subsidy on inputs (dummy = 1 if subsidized and 0 otherwise)

u_i = error term

RESULTS AND DISCUSSION

Factors affecting access to credits among Small Scale fish farmers in Adamawa state

Table 1 provides the result of the linear probability model (LPM) analysis, which was used as an appropriate model and the “*best fit*” that provided the effects of independent variables on the dependent variables (access to credits). It was used with conformity to *a priori* economic criteria for the magnitude of the coefficients, magnitude of the standard error, signs and significance of the coefficients of the multiple determination, F-ratio and t-ratio. Here, the LPM gave the best fit with a minimal standard error, high F-value and high R^2 coefficient of multiple determination.

The result showed that the coefficient of multiple determination (R^2) was 0.89 which indicated that about 89% of the variation in the access to credits by fish farmers was accounted for the independent variables included in the LPM analysis. The F-value was high (103.29) and significant at 1% level of significance and it gives a standard error of 0.17. The result of the independent parameter coefficients were explained below.

The interest rate on capital obtained for fish farming (X_2) was positive and significant at one percent; this implied that there was an increase of 0.153%. This positive coefficient indicates that increase in interest on capital increases access to credit which obviously is contrary to expectation. This was likely because the lending institutions were more secured to give credits when their interest rates were relatively high to keep their business going; also, the borrowers will have less competition of accessing the credits at such rate compared to institutions that gave lower interest because of their dependence on government grants and could not meet up with consumers capital demand.

The insurance premium paid on fish farms (X_3) was positive and significant at one percent; this depicts that there was an increase of 0.255% probability for fish farmers’ had access to credits if they register their fish farms with insurance institute and pay their insurance premium regularly. This was because the credits lending institutions were secured, because insurance institutions would cover their lost and remits the loan given to the farmer including the interest whenever there was natural disaster, climatic effects and unforeseen danger on their fish farms.

The collateral involved in accessing credits (X_5) was negative and significant at five percent; this showed that there was a decrease of 0.182% probability for fish farmers’ had access to credits with the burden of lending institutions demanding collateral from them to secure their loan. This was because most of those involved in the fish farming do not had assets (properties) or other capital security to give, that can guarantee them obtain credits facilities.

Table 1: Results of Linear Probability Model for Access to Credits among Fish Farmers in Adamawa state

Variables	Parameters	Coefficients	T-Ratio
Constant	β_0	-0.203	-1.446
Amount Acquired	β_1	-6.710E-8	-0.772
Interest Rate	β_2	0.153***	11.747
Farm Insurance	β_3	0.255***	4.017
Literacy Level	β_4	-0.044	-1.372
Collateral on loan	β_5	-0.182**	-2.209
Payments Period	β_6	0.060*	1.828
Installment of Payment	β_7	-0.324***	-4.222
Gender	β_8	0.076	1.081
Age	β_9	0.009***	3.782
Formalities	β_{10}	-0.187***	-4.158
Subsidy on Inputs	β_{11}	0.216***	4.314
R ² (%)		89.2%	
F-Value		103.285***	
S		0.171	

Source: Computer Output from Frontier Analysis, 2013, ***Represents values that are significant at 1% level**Represents values that are significant at 5% level, *Represents values that are significant at 10% level S = Standard error. The LPM equation is presented as: $Y = - 0.203 - 6.71E-8X_1 + 0.153X_2 + 0.255X_3 - 0.044X_4 - 0.182X_5 + 0.060X_6 - 0.324X_7$ (-1.446) (-0.772) (11.747)***(4.017)***(-1.372) (-2.209)** (1.828)* (-4.222)*** + 0.076X₈ + 0.009X₉ - 0.187X₁₀ + 0.216X₁₁ + u_i(3)

(1.081) (3.782)*** (-4.158)*** (4.314)***

***Significant at 1% level

**Significant at 5% level

*Significant at 10% level

R²=8.92%

F-value 103.28

Standard error =0.17

The values in parenthesis are t-ratios

The length of period to pay back credit (X₆) was positive and significant at ten percent; this asserted that there was an increase of 0.060 % probability for fish farmers' had access to credit, if they were given longer period to pay back their credit. This was because longer time given to fish farmers to remit their loan would meet up with their harvest/cropping and sale period of their stock; this would made them recovered what they have invested on their fish farms over the production period. The installment of payment of the credit (X₇) was negative and significant at one percent; this confirmed that there was a decrease of 0.324% probability for fish farmers' had access to credit if their loan payment was spread over longer period than once payment. This was because installment remittance was to start when the fish farmers were still using the credit obtained in managing their stock which was the primary purpose of the loan, which could not go concurrently with remittance.

The age of the fish farmers (X₉) was positive and significant at one percent; this opined that there was an increase of 0.009% probability for older fish farmers' had access to credit than the younger counterparts. This was because farmers that were older by age were more responsible and secured; having family with definite address than the younger counterparts. The formalities involved in accessing credits (X₁₀) was negative and significant at one percent; this viewed that there was a decrease of 0.187% probability for fish farmer had access to credit, if formalities, paper work and bureaucracy involved were not reduced. This was because most of the formalities involved in securing loan would had delay the actual release of the credit fund, which may not benefit the fish farmer with

their primary needs of the fund; purchase of inputs and management of stock as well as harvest and marketing.

The subsidy on inputs (X_{11}) was positive and significant at one percent; this indicated that there was an increase of 0.216% probability for fish farmers' have access to credit when their production inputs are subsidized. This was because the fish farmers were encouraged to go for loan when they had defined the usage of the anticipated fund and also, to obtain their inputs when it was readily available. Meanwhile, the lending institutions can acquire the subsidized inputs and lend out to the fish farmers in kind; in which the farmers were to remit in cash after harvest/cropping and sales.

However, from the result, amount of capital acquired by fish farmers (X_1), their literacy level (X_4) and gender (X_8) were insignificant at conventional levels. This compliments the works of Lawal *et al.* (2009); Adegbite (2011); Dzadze *et al.* (2012); Olatinwo *et al.* (2012); Ololade *et al.* (2013); Obisesan, (2013) and Ugwumba and Omojola, (2013) that identified interest rate, farm insurance, payments period, age and subsidy on inputs among others as factors responsible for access to credits among farmers.

Constraints to Credit Acquisition among Small Scale Fish Farmers in the Adamawa State

Table 2 shows that 13.32% of the responses by fish farmers reflects that, the amount they collect as credits could not meet up with their needs in production, while about 11.71% reported problem of formalities involved in acquiring the loan. Lack of collateral security had 10.31% of the responses. Others are in the following order, lack of lending bodies (9.77%), lack of guarantor (9.56%), high interest rate (9.02%), mode of repayment (8.38%), period of repayment (7.84%), lack of cooperative (7.41%), lack of information about the credit availability (6.99%) and lack of insurance facilities (5.69%). It is clearly seen that, the amount fish farmers collect as credits, formalities involved in acquiring credits, lack of collateral security, lack of lending bodies, lack of guarantor, and high interest rate were at the top of the problems associated with fish farmer in acquiring credit. This is line with Lawal *et al.* (2009); Adegbite (2011); Dzadze *et al.* (2012); Olatinwo *et al.* (2012); Ololade and Olagunju (2013); Obisesan, (2013) and Ugwumba and Omojola, (2013) that suggested most of the constraints identified as issues in access to credits in agricultural activities.

Table 2: Ranking Distribution of Problems Associated with Credit Acquisition among Fish Farmers in Adamawa State

Problems	Frequency *	Percentage	Rank
Amount Acquired	124	13.32	1
Formalities involved	109	11.71	2
Lack of collateral security	96	10.31	3
Lack of Lending Bodies	91	9.77	4
Lack of guarantor	89	9.56	5
High Interest Rate	84	9.02	6
Mode of Repayment	78	8.38	7
Period of Payment	73	7.84	8
Lack of Cooperatives	69	7.41	9
Lack of information	65	6.99	10
Lack of Insurance	53	5.69	11
Total	931	100	

Source: Field Survey, 2013. *Multiple responses exist.

CONCLUSION AND RECOMMENDATION

The study examined factors influencing access to credit among fish farmer in Adamawa State with the view of finding the parameters responsible for access to credits and the problems associated with access to credits, the linear probability model shows that interest rate, farm insurance, payments

period, age and subsidy had positive coefficients, while collateral on loan, installment of payment and formalities had negative effects. It also indicated that the major problems with access to credit were amount acquired, formalities involved and lack of collateral security. On the basis of the findings of the study, it is recommended that agricultural lending institutions should be strengthened, fish farms to be insured and sufficient fund to be provided with minimal and bearable formalities, for the improvement in fish production, motivation of fish farmers and policy making.

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