IJAERD E-Journal International Journal of Agricultural Economics and Rural Development - 10 (1): 2019

Agricultural-credit needs and utilisation among small-scale fish farmers in Obio-Akpor local government area of Rivers state, Nigeria

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Abstract: The study examined micro-credit needs and utilisation among small-scale fish farmers in Obio-Akpor Local Government Area of Rivers State, Nigeria. The objectives were to: investigate types of pond system used in the study area; identify the area of micro-credit utilisation among the farmers; identify the micro-credit needs of small-scale fish farmers; and determine socio economic determinants of micro credit utilisation. Data were collected through the use of a questionnaire. A total of nineteen (19) respondents were used, seventeen (17) were the fish farmers selected from six communities and two (2) were the micro-credit banks. Data were analyzed with the use of frequency, percentage, mean scores and ordinary least square (OLS) multiple regression. Findings showed that majority (53%) cultured their fish in plastic and concrete ponds, (88%) of the respondents used bore-hole as source of water. Micro-credit was used for the following; increase in farm size ($\bar{x}$ =4.9), Purchase of new fishing equipment ($\bar{x}$ =4.9), Purchase feeds ($\bar{x}$ =4.9), Acquire capital assets ($\bar{x}$ =4.7), Pond repair ($\bar{x}$ =3.7) and Payment of labour ($\bar{x}$ =3.6). micro-credit needed for the following; Transport ($\bar{x}$ =4.9), Purchase of fishing tools ($\bar{x}$ =4.9), Meet land clearing needs ($\bar{x}$ =4.8), Boost working capital base ($\bar{x}$ =4.8), Purchase of equipment ($\bar{x}$ =4.7), Meet storage needs ($\bar{x}$ =4.4), Hire labour ($\bar{x}$ =4.1), Servicing and maintenance of capital Equipment ($\bar{x}$ =4.0), consumption needs ($\bar{x}$ =3.5) and Children's school fees ($\bar{x}$ =3.5) .The result of the linear regression analysis showed that household size and farming experience were determinants of micro-credit acquisition at P≤0.05. The study recommended that the credit to farmers need to be increased so that the fish farmers could make greater impact in fish production and increase economic growth in Nigeria

Keywords: Agricultural credit, Needs, Utilisation, small-scale

INTODUCTION

Fish production in Rivers State is dominated by smallholder producers. Smallholder fish production is broadly characterized as a dynamic and evolving sub-sector that is employing labour-intensive harvesting, processing and distribution technologies to exploit marine and inland water resources (FAO, 2005; Bene, 2006). The activities of this sub-sector, conducted full-time, part-time or just seasonally, are often targeted at supplying fish and fisheries products to local and domestic markets, as well as for subsistence consumption (FAO, 2005; Bene, 2006; Bene *et al.,* 2007). Within the Smallholder fish farmers are those who produce with stocking capacity of less than 2000 fingerlings (Federal Office of Statistics, 1999; Omitoyin, 2007). Small scale fish farming in Nigeria is practiced under four major systems: extensive, semi-intensive, integrated and intensive. The extensive system, according to Omitoyin (2007) and Nwike (2002), small scale fish farming is characterized by low stocking density, low production with little or no nutritional inputs and low investment cost. In the semi-intensive culture system, fish is stocked at a higher stocking density than the extensive system and fed with supplementary feed to support the natural food supply (Ozigbo, Anyadike, Adegbite, and Kolawole, 2014). There is usually pond fertilization to increase the nutrient requirements in the semi-intensive culture system in case of earthen pond. Its production cost is usually moderate, and its yield is higher than the case in the extensive system - above 10,000kg/ha/year (Omitoyin, 2007). The integrated system is the culture of fish alongside other forms of agriculture. It is a farming system where resources are efficiently utilised and recycled to achieve higher production than would be obtained from a single production system (Otubusin, 1994). Devendra (1995) viewed integrated fish farming as a multiple land-use approach which combines fish farming with other agricultural (crops and animals) production systems. On the other hand, intensive fish culture system is one where fishes are stocked at a high density and fed exclusively on a nutritionally-balanced diet to meet their nutrient requirements (Ozigbo *et al.,* 2014). The cost of production is high, and the yield is also very high.

Small-scale fish farmers need micro-credit to purchase fingerlings, fertilizers, agro chemicals, payment for labour cost, transportation and feed. Money is also needed to run the day to day transactions in the farming business and to feed the family. Anyanwu and Anyanwu (2003) observed that small-scale farmers are poor and cannot afford to acquire these modern inputs for their production. This is why the small-scale fish farmers need to acquire micro-credit to carry out their operations. However, the access of these farmers to micro-credit is daunting. How these farmers acquire micro-credit for their production activities is a problem.

The usefulness of any agricultural credit programme does not only depend on its availability, accessibility and affordability but also

on its efficient allocation and utilisation for intended purposes beneficiaries. Oboh, Nagarajiam and Ekpelu (2011) in their study of a marginal analysis of agricultural credit allocation by arable crop farmers in Benue State, Nigeria. From the aforementioned there is the need to raise the necessary capital for fish farming. Anyanwu also observed that farmers do not often receive much financial assistance from relations, friends or neighbours as these people are generally poor. Herbert (2001) identifies both informal or non-institutional and formal or institutional credit to farmers. In Nigeria, informal source of credit available to small-scale fish farmers can be divided into financial self-help groups and individual financial self-help associations and other development oriented self-help groups in which financial functions are normally secondary (Kropp, *et al* 1989). The most widespread and most important financial self-help or mutual aid associations are the savings and credit associations (Seibel and Darnachi, 1982; Seibel and Max, 1987; Nweze, 1990). These can also be further divided into rotating and non-rotating associations and association with and without a loan scheme.

Objectives of the study

The objectives of the study were to;

1. investigate types of pond system used in the study area;
2. identify the area of micro-credit utilisation among the farmers;
3. identify the micro-credit needs of small-scale fish farmers; and
4. determine socio economic determinants of micro credit utilisation

Material and Methods

This study was carried out in Obio-Akpor Local Government Area (LGA), Rivers State, Nigeria. This area is the South-South region of Nigeria, otherwise known as Niger Delta Region. It is located between latitudes 445°E and 460°E and longitudes 650°E and 800°E (Eludoyin *et al,* 2011). Obio-Akpor LGA is sharing boundary with Etche LGA on the North, Port-Harcourt LGA on the South, Ikwerre LGA and Emuoha LGA on the East, Oyigbo LGA and Eleme LGA on the West. The people are predominantly farmers, traders and artisans.

The population of the study constitutes all registered fish farmers and micro-finance institutions and informal sources of credit in Obio-Akpor Local Government of Rivers State, Nigeria. The Nigerian National Bureau of Statistics gave the population census in 2006 of the LGA to be 464,789. According to Rivers State Ministry of Agriculture, there are seventeen (17) registered contact fish farmers in Obio-Akpor LGA.

The purposive sampling technique was employed for this study. The entire population of seventeen registered fish farmers was used as the sample size. Owing to the small sample size, T-test was used to interprete the result from the analysis.

Data were collected by the researcher through primary source. The instrument for data collection (questionnaire) was divided into two sections. The first information on pond system

Data collected from the respondents were analyzed using descriptive statistics such as table, percentage and frequency, while the t-test statistics was used to test the stated hypotheses at 0.05 level of significance. A five point likert type scales with options; Strongly Agreed (5), Agreed (4), Disagreed (3), Strongly Disagreed (2), and undecided (1)was also used. The values were added make it (15) which was divided by 5 to get 3.00. This served as cut-off point. Multiple Regressive analysis was used as well to determine credit utilisation. Another four point likert type scales with options; strongly agreed (4), agreed (3), disagreed (2) strongly disagreed (1) was also used to evaluate the constraints in micro-credit utilisation among the fish farmers.

The multiple regression model was implicitly specified as follows:

$$Y=f\ (X_1,X_2,X_3,X_4,X_5,X_6\ \ X_{7.....}\ \ X_n) \quad .....\text{equ 1}$$

Where; Y= Micro-credit acquisition (Yes = 0; No = 1)

X_1 = Sex (female = 0; male = 1)

X_2 = Age (years)

X_3 = Marital status (married = 1; Otherwise = 0)

X_4 = Household size (persons)

X_5 = Educational level (years in school)

X_6= Farming experience (years)

X_7 = Annual income (N)

β_0 = Constant

β = Regression coefficient

e = Stochastic error term

Three functional forms of the model – linear, double log and semi log were fitted to determine the function with the best fit and the linear model proved to be the best fit.

Table 4.1 Showed pond information of Fish Farmers in the study area

Variable	Frequency	Percentage (%)
Pond Type		
Plastic	6	35
Concrete	2	12
Fibre/Glass	0	0
Rectangular	0	0
Plastic and Concrete	8	53
Earthen pond	0	0
Stocking Density (m^2)		
1–50/m^2	14	82
51–100/m^2	3	18
101–150/m^2	0	0
151–200/m^2	0	0
Number of Ponds		
1 – 5	7	41
6 – 10	8	47
11 – 15	0	0
16 – 20	2	12
Source of Water		
Borehole	15	88
Well	0	0
Rain	0	0
Stream	2	12
Underground	0	0
Time of harvest / year		
Once	0	0
Twice	10	59
Thrice	7	41
Total	17	100

Source: Field Survey, 2020

Rearing facilities of fish farmers

The distribution of fish farmers according to facilities used for rearing fish is presented in Table 4.2. A fraction of the farmers (35%) cultured their fish in plastic ponds, 12% made use of concrete pond. A lot of the fish farmers (53%) cultured their fish in plastic and concrete ponds. None of the fish farmers cultured their fish in earthen pond. This contradicts with the work of Ele *et al.* (2013) on economic analysis of fish farming in Calabar, Nigeria where they reported that earthen pond was mostly preferred by fish farmers in Calabar.

Sources of water

Water is an indispensable input in fish rearing. Fish need water to grow and that is one of the reasons why adequate and constant sources of water is a must for every farmer that wants to achieve the best in terms of raising fish either for fingerling or table size.

The result showed the distributions of the water source used by the respondents (table 4.2). The majority (88%) of the respondent used bore-hole, only few (12%) used stream water.

Well and rain water were not used in the study area. Overall, the percentage distributions for water source were 96 and 4% for bore-hole and well water, respectively. No respondent was recorded for the use of water from river, stream and rainfall. It might be because bore-hole was more dependable and free of diseases and parasites (Williams *et al.*, 2012).

Utilisation of micro credit by Fish Farmers

Result on Table 4.2 showed that the micro credit acquired was utilised properly. The fish farmers mean response on how they utilise the credit showed that the mean score of each item was above 3.50. This is above the decision cut-off point. This implies that increase in farm size ($\bar{x}$ =4.9), Purchase of new fishing equipment ($\bar{x}$ =4.9), Purchase feeds ($\bar{x}$ =4.9), Acquire capital assets ($\bar{x}$ =4.7), Pond repair ($\bar{x}$ =3.7) and Payment of labour ($\bar{x}$ =3.6) were agreed as ways of utilisation of micro-credit. This shows that the loan had positive effect on the fish farmers' income. Nwagbo (1989) agreed with this fact when he stated that, credit, if well applied, should increase size of farm, productivity and therefore income. It could be stated that in spite of the fact that the financial institution may not have met the expectation of the farmers by moving them to higher economic level, it has contributed in enhancing their productivity and income.

Table 4.2: Response on ways of utilisation of micro credit in the study area

S/N	Utilisation of micro credit (n=17)	SA (5)	A (4)	D (3)	SD (2)	UD (1)	Total Score	Mean Score	Remark
1	Increase my volume of farm size	16	1	0	0	0	84	4.9	Agreed
2	Enable me to acquire new fishing equipment	16	1	0	0	0	84	4.9	Agreed
3	Enable me to acquire capital assets.	15	1	0	0	1	80	4.7	Agreed
4	Payment of labour	0	10	7	0	0	61	3.6	Agreed
5	Purchase of feeds	16	1	0	0	0	84	4.9	Agreed
6	Pond repair	1	11	4	1	0	63	3.7	Agreed

Source: Field survey 2020
Multiple Responses ≥ 3.00 = Agreed; ≤ 3.0 = Disagreed: SA= Strongly Agreed, A= Agreed, D= Disagreed, SD = Strongly Disagreed, UD = Undecided

Micro-Credit Needs of Fish Farmers

Table 4.3 gives a summary of the results of micro-credit needs of farmers in the study area obtained from the field survey. Using a mean score of 3.00 as the decision rule, the result in Tables 4.3 shows that all the micro credit needs in the study area were accepted by the fish farmers. This implies that Transport needs($\bar{x}$ =4.9), Purchase of fishing tools ($\bar{x}$ =4.9), Meet land clearing needs ($\bar{x}$ =4.8), Boost working capital base ($\bar{x}$ =4.8), Purchase of equipment ($\bar{x}$ =4.7), Meet storage needs ($\bar{x}$ =4.4), Hire labour ($\bar{x}$ =4.1), Servicing and maintenance of capital Equipment ($\bar{x}$ =4.0), consumption needs ($\bar{x}$ =3.5) and Children's school fees ($\bar{x}$ =3.5) were agreed as micro-credit needs of fish farmers in the study area.

Most rural farmers often find it very difficult to pay for their children school fees and consumption needs because of the little income they earn. They tend to borrow money so their children will be better in future. This agrees with the study of Ogunfowora *et al*. (1972) who reported that credit is not only needed for farming purposes, but also for family and consumption expenses; especially during the off season period.

Table 4.3: Micro credit needs of fish farmers

S/N	Micro credit needs of fish farmers (n=17)	SA (5)	A (4)	D (3)	SD (2)	UD (1)	Total Score	Mean Score $\bar{x}$	Remark
1	Transport need	15	2	0	0	0	83	4.9	Agreed
2	Purchase fishing tools	15	2	0	0	0	83	4.9	Agreed
3	Hire labour	4	10	3	0	0	69	4.1	Agreed
4	Meet storage needs	11	5	0	1	0	75	4.4	Agreed
5	Meet land clearing needs	10	6	0	1	0	81	4.8	Agreed
6	Purchase equipment	12	5	0	0	0	80	4.7	Agreed
7	Servicing and maintenance of Equipment	4	10	3	0	0	69	4.0	Agreed
8	Boost working capital base	14	3	0	0	0	82	4.8	Agreed
9	Consumption needs	2	6	8	1	0	60	3.5	Agreed
10	Children's school fees	2	6	8	1	0	60	3.5	Agreed

Source: Field survey 2020
Multiple Responses ≥ 3.00 =Agreed; ≤ 3.00-Disagreed. SA= Strongly Agreed, A= Agreed, D= Disagreed, SD = Strongly Disagreed, UD = Undecided

Table 4.4 gives a summary of the results of micro-credit needs of farmers by micro credit institutions in the study area obtained from the field survey. Using a mean score of 3.00 as the decision rule, the result in Tables 4.4 shows that almost all the micro credit needs in the study area were accepted by the financial institutions. This implies that Purchase inputs ($\bar{x}$ =4.9), Purchase equipment ($\bar{x}$ =5.0), Boost working capital base ($\bar{x}$ =4.5), Meet storage needs ($\bar{x}$ =4.5), Purchase of fishing tools ($\bar{x}$ =4.0), Hire labour ($\bar{x}$ =4.0) and Meet

land clearing needs ($\bar{x}$ =4.0) were agreed as micro-credit needs of fish farmers by financial institutions in the study area.

Table 4.4: Showed financial institutions response to micro credit needs

S/N	Micro credit needs of fish farmers (n=2)	SA (5)	A (4)	D (3)	SD (2)	UD (1)	Total Score	Mean Score $\bar{x}$	Remark
1	Purchase inputs	2	0	0	0	0	10	5.0	Agreed
2	Purchase fishing tools	1	0	1	0	0	8	4.0	Agreed
3	Hire labour	0	2	0	0	0	8	4.0	Agreed
4	Meet storage needs	1	1	0	0	0	9	4.5	Agreed
5	Meet land clearing needs	0	1	0	1	0	6	3.0	Agreed
6	Purchase equipment	1	1	0	0	0	10	5.0	Agreed
7	Servicing and maintenance of capital Equipment	0	1	0	1	0	5	2.5	Disagreed
8	Boost working capital base	1	1	0	0	0	9	4.5	Agreed
9	Consumption needs	0	0	1	1	0	5	2.5	Disagreed
10	Children's school fees	0	0	0	2	0	4	2.0	Disagreed

Source: Field survey, 2020
Multiple Responses ≥ 3.00 = Agreed; ≤ 3.00 = Disagreed. SA= Strongly Agreed, A= Agreed, D= Disagreed, SD = Strongly Disagreed, UD = Undecided

Determinants of micro-credit utilisation

The determinants of the respondents' micro-credit acquisition is presented in Table 4.6. The linear regression model has an R-square of 0.941 which implies that about 94% of the determinants of a respondent to acquire micro-credit are strongly explained by the independent variables. Only 16% was not explained, this was due to stochastic error term.

The result showed that the coefficient of household size and farming experience were statistically significant at 5 percent level.
The following regression equation was built from the lead equation.

Table 4.6 Regression estimates of the socio-economic determinants of micro-credit utilisation

Variable	B	Std. Error	T	Sig.
Constant	.038	.395	.096	.925
Sex	-.284	.151	-1.889	.092
Age	-.112	.220	-.509	.623
Marital Status	.189	.336	.562	.588
Household Size	.571	.206	2.771	**.022****
Educational Level	.178	.187	.954	.365
Farming Experience	1.552	.345	4.495	**.001****
Annual Income	-.321	.170	-1.886	.092
R^2	0.961			
F-value	31.947			

Source: Field survey, 2020,
Significant at 0.05 significant level

$Y= 0.038 - 0.284(X_1) - 0.112(X_2) + 0.189(X_3) + 0.571(X_4) + 0.178(X_5) + 1.552(X_6) - 0.321(X_7)$

The coefficient of educational level and marital status were positive but were not significant. More specifically, the coefficients of sex, age, and annual income were negative.

The finding from the study showed that Sex (X_1) had a coefficient of -0.284, this implies that women had low access to micro-credit compared to men, though it was not significant at 5% probability level. This finding disputed the findings of Kaino (2005) and that of Sebopetji and Belete (2009). However, the finding is consistent with the findings of Winter-Nelson and Temu (2002) who reported a negative relationship between female headed and liquidity constrained in Tanzania.

Household size (X_4) had a positive coefficient (0.571), which was significant at 5% level. This means that the amount of agricultural credit acquired and household size had direct correlation. This result is also in agreement with priori expectation. As the size of a household increases, the household needs will also increase. In a bid to satisfy the increased household needs, relatively larger amount of loans will be acquired. However, the tendency for diversion of agricultural loan to

consumption purposes also increases with household size.

Farming experience (X_6) was also positive and significant with coefficient of (1.552). This suggests that farming experience is an important determinant of micro-credit acquisition. The years of farming experience of the household head is believed to influence both access to loan and the size of loan. This is because older farmers with years of farming experience are expected to be knowledgeable about farming and the various sources of credit. They are also expected to have better credit management skills and credibility with lenders (Anang *et.al.* 2015). Farming involves a lot of risks and uncertainties; therefore to be competent enough to handle all the vagaries of agriculture, farmers must have stayed in farming business for quite some time (Ogundele and Okoruwa, 2006).

Annual income (X_7) had a negative coefficient (-0.321) and was not significant at 5%. This implies that those with low income had better chances to access micro-credit from financial institutions. The negative coefficient was expected because most of the credit that was made available to fish farmers were targeted to the real poor (those with low income). In addition, most of the available credit schemes had eligibility criteria favouring people with relatively low income in rural areas. This result is inconsistent with those of Anyiro and Oriaku (2011), Aliero and Ibrahim (2011) who find level of income to be an important determinant of demand for credit.

CONCLUSION AND RECOMMENDATIONS

The credit acquired by the small-scale fish farmers were used to the fullest in such items, as purchase fishing tools, meet land clearing needs, boost working capital base, purchase equipment, Meet storage needs, hire labour, servicing and maintenance of capital equipment, consumption needs and children's school fee payment. The fish farmers still felt that the credit should transform them from small-scale to middle or large scale of production. The loan obtained by the fish farmer though small was properly utilised because their production and income was increased. It must be stress that the farmers find it extremely difficult to achieve optimum progress and high performance because of what they encountered in obtaining the credits.

The following recommendations are made;

i. The credit to farmers need to be increased so that the fish farmers could make greater impact on fish production and economic growth of the Nation.
ii. The procedures for securing loans should also be streamlined in order to make it simple for the farmers.
iii. Loans extended to young farmers with high number of dependents should be monitored by the lending institution to ensure that these loans are applied to activities for which they are advanced for.

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