

Impact of Microfinance Bank Loan on Aquaculture Development in Ogun State, Nigeria

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ABSTRACT

This study was conducted to assess the impacts of microfinance bank loan on beneficiaries and non-beneficiaries aquaculturists in Ogun state, Nigeria. A total of eighty aquaculturists (40 beneficiaries and 40 non-beneficiaries) were randomly selected from four agricultural extension zones, as classified by Ogun State Agricultural Development Programme (OGADEP). Data collected were scored and the percentages of the parameters were calculated appropriately. The types of loan disbursed to beneficiaries revealed that 27.5% was in kind, 7.5% in cash, and the remaining 65% was both in cash and kind. The credit package ranged between ₦50,000 and ₦250,000, with 40% of them ranging between ₦ 100,001 and ₦150,000 were approved, and 70% of the loans were released timely. The results obtained from the membership of cooperative showed that 87.5% of the beneficiaries and 37.5% of the non-beneficiaries were cooperators. Meanwhile, 65% of the beneficiaries earned a higher income (₦62,500), while only 42.5% of the non-beneficiaries earned this amount per respondent. Major constraints hindering aquaculture development in the study area include high cost of feeding, poor marketing channel, lack of adequate capital and high cost of investment. Lastly, recommendations are made for the financial institutions, government and other lending institutions on how to improve the livelihood of the aquaculturists, i.e. by increasing the loans that are usually granted.

Keywords: Aquaculture, constraints, loan and microfinance

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INTRODUCTION

Aquaculture has been globally recognized as the fastest growing food industry NACA/FAO (2000), and it also plays an increasingly important role in meeting the demand for

fish. Fish is the critical food supply for the poor people in the world, providing 1 billion people sustenance for their daily lives and 150 million people employment, in which 90% are in the artisanal sector mostly in Africa. Worldwide per capita fish supply in 2009 stood at 17.2 Kg/yr, in which aquaculture accounted for 38% (World Fish Centre, 2005; FAO, 2010). The ability to meet the world's demand for fish from natural fish stock has reached its peak and it is now declining. The growing human population and dwindling natural stocks require the world to turn increasingly to aquaculture, managed natural fisheries and genetically improved fast growing fish, if it is to meet future food needs (World Bank, 2004; FAO, 2010). According to Heindl (2002), aquaculture contributes to more than 19 million tones of fin fish and shell fish annually to the world fish supply, with most of these produced in an extensive system particularly in China, whereby about 11 million tones of Carps are produced (about 8 million tones are produced in semi-intensive systems). In 2006, total world aquaculture production was 51.7 million tones (FAO, 2008), while the total world aquaculture in 2009 was 55.1 million tones (FAO, 2010).

ICLARM (2001) reported that aquaculture appeared to be one of the last frontiers to increase contribution to food security in developing world and it now represents the fastest growing agricultural industry in some countries, with freshwater aquaculture dominating the total aquaculture production.

In recent times, however, only 0.62 million metric tones of fish are produced annually, which is less than one-third of the annual fish demands of about 2.6 million metric tones supplied from the local production in Nigeria (CBN, 2007; FDF, 2005). The implication of this is that there is still a demand-supply gap which has to be filled by importation of more than 1.98 million metric tones valued at about ₦165 billion annually (Dada, 2007; Olaoye, 2010). Only 2% of these 0.62 million metric tones are produced locally from aquaculture, while the remaining 98% is from captured fisheries which are already over-exploited (Aliu & Agbolagba, 1998). The potential of Nigeria's fishery resources has been estimated at over 3.0 million metric tones per annum and if properly harnessed, it will not only be capable of bridging the wide demand-supply gap but also generate surplus for export (Dada, 2007).

Despite all the potentials in this industry, maximum aquaculture production is faced with many problems hindering its development such as the lack of sufficient fund or credit sources, technical know-how, high cost of feeding, poor marketing channels, and poaching, among others (Olaoye, 2010).

Nigeria is one of the largest importers of fish with some 800,000 metric tones annually, contributing to a negative impact on the balance of trade (Miller & Atanda, 2004). Nigeria now seeks substitution with increase domestic production through aquaculture and culture-based fisheries

development, which can increase rural employment, improve food security and reduced rural poverty (Alamu *et al.*, 2004).

Credit that has been discovered to be of great importance to the sustenance of fish farming and aquacultural development in Nigeria is lacking and regarded as a major constraint militating against the development of the aquaculture industry (Onwuka, 2006). Credit is also needed for the diversification of fishing efforts away from over-exploited resources to less exploited ones, therefore, a shift to aquaculture (FAO, 2008). Recent developments in Africa and other developing countries reinforce the contention that microfinance institutions are essential for the development of rural areas (Iheduru, 2002).

Aihonsu (2001) further stressed that in developed countries, credit has been used as a means to improving farmer's efficiency and accelerating aquacultural productions. To this end, inadequate flow of funds (loans) into aquaculture has been identified as a critical factor in accelerating incremental fish production in Nigeria (Olieh, 1980). According to Kherallah and Olawale (2000), the lack of access to loan and adequate working capital is a significant barrier to further expansion of aquaculture development. Although economic analysis of aquaculture practices in Ogun state has revealed fish production to be generally profitable (Aihonsu., 2001; Olaoye & Odebiyi, 2010), the profit cannot be maximized if there is no adequate loan or capital for an effective monitoring of lucrative aquaculture business.

Loan has been established to affect farmers' investment behaviour and productivity. However, there is presently no adequate basis to suggest that credit or loan use has a positive or a negative influence on farm productivity in Nigeria. Most of the studies on credit in the country have concentrated on understanding the socio-demographic and economic factors influencing the supply and demand for credit in the economy (Okoruwa & Oni, 2001; Okunade, 2007).

In order to bridge this gap in knowledge, the current study economically relates access to loan and the impact of microfinance bank loan on aquaculture development. It is against this backdrop that this study aims to examine the productivity, output and profit level of the beneficiaries and non-beneficiaries of aquaculture in Ogun State, Nigeria.

The general objective is to assess the impacts of microfinance banks loan on the development of aquaculture industries in Ogun state of Nigeria to increase productivity and income and to improve the livelihood of the populace.

The following specific objectives were addressed in order to achieve the broad objective. The specific objectives are to:

- describe the socio-economic characteristics of the fish farmers in Ogun state.
- examine the characteristics of microfinance bank loan and its contribution to aquaculture development.

- identify the constraints facing aquaculture development in the study area.

MATERIALS AND METHODS

Study Area

The study was conducted in Ogun state with Abeokuta as the state capital that consists of twenty local government areas. The state covers an area of about 16,409.265 Km² (Ayinde *et al.*, 2002), with an estimated population of over 3 million people (NPC, 2006). The study covered the whole four agricultural extension zones, as classified by the Ogun State Agricultural Development Programme (OGADEP) based on the ecological views for effective, adequate and complete improved technologies dissemination (Olaoye *et al.*, 2007). The four zones are Ikenne, Ilaro, Ijebu-ode and Abeokuta zone that are located in the south-western Nigeria.

The four agricultural zones are well known as the best ecological suitable areas for fish production and hence the state is referred to as the basket of fish for the nation because of the abundance of wetland, with an annual growth rate of 3% per annum. As of 2008, farmed fish produced by 6,664 productive fish farmers was found to be synchronous with the growth trend of aquaculture and the resources in Ogun state within the same period (OGADEP, 2008).

Data Collection and Sampling Technique

The study covered the four agricultural extension zones. Clustered sampling method

was used by selecting blocks and circles in each zone based on the higher number of microfinance loan beneficiaries. Productive fish farmers benefitting from microfinance bank loans were purposively selected from all the zones to give a total of 40 beneficiaries. These 40 non-beneficiaries respondents were also selected using simple random sampling technique. Both primary and secondary data were used during the study. The respondents were interviewed using their responses as primary data, while secondary data were obtained from the records provided by microfinance bank, published articles, annual reports and relevant texts.

Analytical Techniques

The primary data obtained from the structured interview schedule were subjected to descriptive and inferential statistical analysis. The descriptive statistics for this study included frequency, percentages, mean and mode, while a hypothesis was tested using budgetary technique and profitability ratios.

RESULTS

Socio-demographic Profile of the Respondents

The ages, marital status, number of wives, educational qualification, and fishing experience of the aquaculturists are presented in Table 1. Majority of the respondents were within the age group of 41 and 50 years, and these accounted for 62.5% and 45% for the beneficiaries and non-beneficiaries. Most (75% and 80%) of the beneficiaries and

TABLE 1
Socio-demographic Profile of the Respondents

| Parameters | Beneficiaries | | Non-beneficiaries | |
|------------------------------|---------------|-------------|-------------------|-------------|
| | Frequency | Percentages | Frequency | Percentages |
| Age (Years) | | | | |
| 21-30 | 0 | 0.0 | 4 | 10.0 |
| 31-40 | 6 | 15.0 | 9 | 22.5 |
| 41-50 | 25 | 62.5 | 18 | 45.0 |
| 51 & above | 9 | 22.5 | 9 | 22.5 |
| Total | 40 | 100.0 | 40 | 100.0 |
| Marital Status | | | | |
| Single | 4 | 10.0 | 6 | 15.0 |
| Married | 30 | 75.0 | 32 | 80.0 |
| Divorced | 4 | 10.0 | 1 | 2.5 |
| Widow | 2 | 5.0 | 1 | 2.5 |
| Total | 40 | 100.0 | 40 | 100.0 |
| Educational level | | | | |
| Primary school completed | 1 | 2.5 | 3 | 7.5 |
| Primary school uncompleted | 1 | 2.5 | 1 | 2.5 |
| Secondary school completed | 23 | 57.5 | 17 | 42.5 |
| Secondary school uncompleted | 2 | 5.0 | 4 | 10.0 |
| Tertiary school completed | 11 | 27.5 | 9 | 22.5 |
| Tertiary school uncompleted | 2 | 5.0 | 6 | 15.0 |
| Total | 40 | 100.0 | 40 | 100.0 |
| Religion | | | | |
| Christianity | 25 | 62.5 | 22 | 55.0 |
| Islam | 14 | 35.0 | 16 | 40.0 |
| Tradition | 1 | 2.5 | 2 | 5.0 |
| Total | 40 | 100.0 | 40 | 100.0 |
| Household size | | | | |
| 0-3 | 8 | 20.0 | 8 | 20.0 |
| 4-6 | 26 | 65.0 | 24 | 60.0 |
| 7-9 | 5 | 12.5 | 8 | 20.0 |
| 10 & above | 1 | 2.5 | 0 | 0.0 |
| Total | 40 | 100.0 | 40 | 100.0 |
| Fish farming experience | | | | |
| 0-5 | 3 | 7.5 | 14 | 35.0 |
| 6-10 | 16 | 40.0 | 7 | 17.5 |
| 11-15 | 11 | 27.5 | 13 | 32.5 |
| 16-20 | 3 | 7.5 | 4 | 10.0 |
| 21-25 | 5 | 12.5 | 2 | 5.0 |
| 26-30 | 1 | 2.5 | 0 | 0.0 |
| 31 & above | 1 | 2.5 | 0 | 0.0 |
| Total | 40 | 100.0 | 40 | 100.0 |

non-beneficiaries were married. Education is an important factor which can influence farm productivity and determine farmer's access to loan and repayment. Level of education, according to the study, showed that over 95% and 90% of the beneficiaries and non-beneficiaries respectively have one form of education or the other. From the results, one can also infer that Christianity is the mostly practiced religion than any other religions as the majority [62.5%, 55%] of the benefiting and non-benefiting fish farmers respectively are Christians. The average household size in the locality was found to be 5 persons for both the beneficiaries and non-beneficiaries. The respondents' mean fish farming experiences showed 13 years and 12 years for the beneficiaries and non-beneficiaries, respectively. As the major occupation, fish farming is a function of the importance attached to it as a source of livelihood. In particular, 65% of the beneficiaries and 52.5% of the non-beneficiaries had fish farming as their major occupation and thus were likely to commit more number of hours, efforts and loans towards the success of the farm enterprises.

Fisheries Credit Package

The results in Table 2 show the loans benefited from the microfinance banks in Ogun state, Nigeria, by sample fish farmer beneficiaries. The kind of loans disbursed to fish farmers' shows that 27.5% were in kind (loans disbursed in kind were usually in form of input such as fish feed, fry and fingerlings), while only 7.5% were in cash, and the remaining 65% were both in

cash and kind, and this may be a means of monitoring the use of the released loans. Forty percent (40%) were granted loans of between ₦ 100,001 and ₦150,000, while 20% and 15% received between ₦150,001 and ₦200,000 and ₦50,001 and ₦100,000, respectively. However, one of the setbacks in the loan is the relatively high interest rate complained by the beneficiaries, whereby 75% said they paid well over ₦10,000 (12%) on the granted loans. The distribution of the beneficiaries according to the year of disbursement is shown in Fig. 1.

Fishermen Cooperative Society

Cooperative society involves a social participation that helps farmers to pool their resources to have access to fisheries inputs and to have insights into their fishing issues. Membership of the cooperative is therefore a factor which influences the adoption of improved fisheries technologies and poverty alleviation (87.5%) of the beneficiaries were cooperators, while 62.5% of the non-beneficiaries were not in any cooperative society, which may be the reason for not benefiting from any source of loan. This is in line with the position of (Akinbile, 1998) that groups which ensures that members derive benefits from the groups such that they will not have derived individually if they were acting alone.

Income Realized from Sales of Fish

The average income earned by the beneficiaries and non-beneficiaries of Microfinance Bank loan, as revealed by the respondents showed that 65% of the

TABLE 2
Loan Beneficiaries from Microfinance Bank in Ogun State, Nigeria

| Parameters | Frequency | Percentages |
|-------------------------|-----------|-------------|
| Kinds of Loan | | |
| Cash | 11 | 27.5 |
| Kind | 3 | 7.5 |
| Both | 26 | 65.0 |
| Total | 40 | 100.0 |
| Amount Approved | | |
| < ₦50,000 | 4 | 10.0 |
| 50,001- 100,000 | 6 | 15.0 |
| 100,001-150,000 | 16 | 40.0 |
| 150,001-200,000 | 8 | 20.0 |
| 200,001-250,000 | 4 | 10.0 |
| 250,001 & above | 2 | 5.0 |
| Total | 40 | 100.0 |
| Interest Payment | | |
| < 4,999 | 2 | 5.0 |
| 5,000 – 9,999 | 1 | 2.5 |
| 10,000- 14,999 | 11 | 27.5 |
| 15,000-19,999 | 11 | 27.5 |
| 20,000-24,999 | 8 | 20.0 |
| 25,000 &above | 7 | 17.5 |
| Total | 40 | 100.0 |

When loan was taken

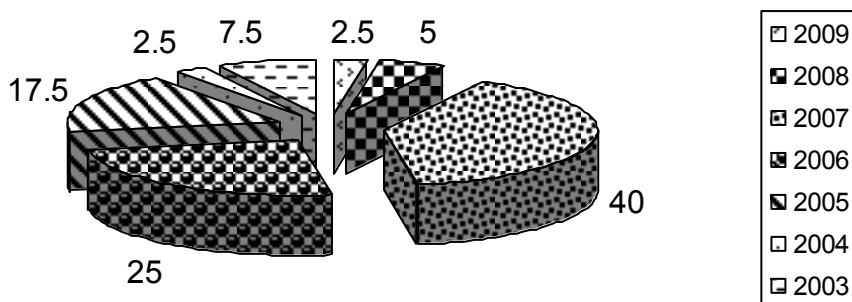


Fig.1: A pie-chart representation of the respondents showing the year when the loan was taken

beneficiaries earned well over ₦2.5 million, while only 42.5% of the beneficiaries did so (see Table 3).

Factors Affecting Aquaculture Development in Ogun State

From the survey, 90% and 80% said the lack of sufficient fund as the major setback to aquaculture development in the study area, while 100% and 95% of the beneficiaries and non-beneficiaries considered high cost of feeding as the major problem hindering aquaculture development. Similarly, 95%, 97.5% and 82.5% of the beneficiaries

and 72.5%, 85%, and 77.5% of the non-beneficiaries said that high inflation rate in the economy, high cost of investment and poor marketing channels respectively as the major factor militating against the development of aquaculture industry (see Table 4).

The Impacts of Microfinance Loan on Aquaculture Development

A larger percentage of the beneficiaries said that the use of microfinance loan had positive effects on aquaculture development, as shown in Table 5.

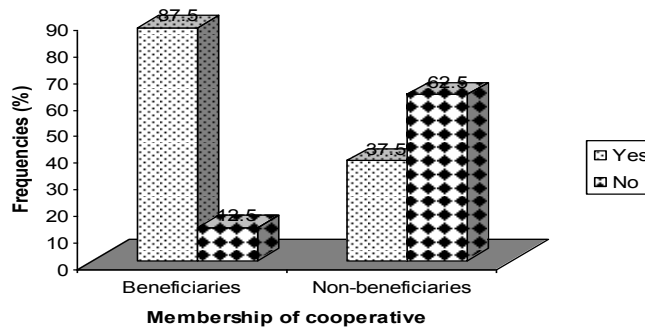


Fig.2: A bar chart representation of memberships of the cooperative of fish farmers

TABLE 3
The distribution of the total income of the fish farmers

| Categories of total income (₦) | Beneficiaries | | Non-beneficiaries | |
|--------------------------------|---------------|------|-------------------|------|
| | Freq | % | Freq | % |
| <499,999 | 0 | 0.0 | 2 | 5.0 |
| 500,000-999,999 | 1 | 2.5 | 3 | 7.5 |
| 1,000,000-1,499,999 | 2 | 5.0 | 7 | 17.5 |
| 1,500,000-1,999,999 | 5 | 12.5 | 4 | 10.0 |
| 2,000,000-2,499,999 | 6 | 15.0 | 7 | 17.5 |
| 2,500,000 & above | 26 | 65.0 | 17 | 42.5 |
| Total | 40 | 100 | 40 | 100 |

Source: Field survey, 2009

TABLE 4
Distribution of factors affecting aquaculture development in Ogun state

| | BENEFICIARIES | | | | NON-BENEFICIARIES | | | |
|------------------------------------|---------------|---------|---------------|--------------|-------------------|---------|---------------|--------------|
| | Very serious | Serious | Not a problem | I don't know | Very serious | Serious | Not a problem | I don't know |
| Lack of appropriate land | 0.0 | 25 | 70 | 5 | 0.0 | 30 | 70 | 0.0 |
| Old age | 0.0 | 0.0 | 100 | 0.0 | 0.0 | 2.5 | 92.5 | 5 |
| Lack of sufficient fund | 0.0 | 90 | 10 | 0.0 | 80 | 12.5 | 5 | 2.5 |
| Poaching | 2.5 | 22.5 | 60 | 15 | 0.0 | 5 | 52.5 | 42.5 |
| Lack of technical know-how | 5 | 75 | 20 | 0.0 | 15 | 50 | 20 | 15 |
| Disease and predators | 0.0 | 7.5 | 60 | 32.5 | 2.5 | 12.5 | 35 | 50 |
| High inflation rate in the economy | 95 | 5 | 0.0 | 0.0 | 72.5 | 17.5 | 7.5 | 2.5 |
| High cost of investment | 97.5 | 2.5 | 0.0 | 0.0 | 85 | 12.5 | 2.5 | 0.0 |
| Poor marketing channels | 82.5 | 10 | 7.5 | 0.0 | 77.5 | 12.5 | 10 | 0.0 |
| Poor quality fish seed | 12.5 | 32.5 | 52.5 | 2.5 | 5 | 55 | 37.5 | 2.5 |
| High cost of feeding | 100 | 0.0 | 0.0 | 0.0 | 95 | 5 | 0.0 | 0.0 |

Source: Field Survey, 2009

TABLE 5
Percentage distribution of the impact of microfinance loan on aquaculture development

| Beneficiaries | Yes | | No | |
|---|------|------|------|------|
| | Freq | % | Freq | % |
| Reduction in culture period | 33 | 82.5 | 7 | 17.5 |
| Increase in overall yield | 39 | 97.5 | 1 | 2.5 |
| Expansion of business | 39 | 97.5 | 1 | 2.5 |
| Increase revenue | 40 | 100 | 0 | 0.0 |
| Improvement in livelihood security | 36 | 90.0 | 4 | 10.0 |
| Improvement in usage of innovation | 28 | 70.0 | 12 | 30.0 |
| Generate employment | 38 | 95.0 | 2 | 5.0 |
| Reduce rural-urban migration | 40 | 100 | 0 | 0.0 |
| Enhance growth and development of rural areas | 40 | 100 | 0 | 0.0 |
| Poverty alleviation | 39 | 97.5 | 1 | 2.5 |

Source: Field survey, 2009

DISCUSSION

The results indicate the impacts of microfinance loan on aquaculture development which spread over the four agricultural extension zones (Abeokuta, Ijebu, Ikenne, and Ilaro) of Ogun State. Majority of all the 40 beneficiaries and non-beneficiaries sampled were between the age of 41 and 50 years, an age in which they are considered highly productive and active to undertake strenuous tasks associated with farm work. This is in line with the assertion of Bello (2000) that age has positive correlation with the acceptance of innovations and risk taking as implicit in the credit borrowing for agricultural production.

Most of beneficiaries (75%) and non-beneficiaries (80%) are married. Education is an important factor which influences farm productivity and determines farmer's access to loan and repayment. In specific, the level of education showed that over 95% and 90% of beneficiaries and non-beneficiaries have one form of education or the other, respectively. This contradicts with the general opinion that most farmers are illiterate or semi-illiterate; most of whom have dropped out of the formal school system, as evidenced from the studies of Ozor (1998) and Okwoche *et al.* (1998).

From the results, one can also infer that Christianity is the mostly practiced religion than any other religions among the benefiting (62.5%) and non-benefiting fish farmers (55%). The average household size in the locality was found to be 5 persons for both the beneficiaries and non-beneficiaries. The implication is that the relatively small

household size may increase the number of labours needed as against the findings of Adegbite and Oluwalana (2004) and Adegbite *et al.* (2008) that the larger the household size, the more the likelihood of sustainable labour efficiency on farmer's farm, given the constant labour.

The respondents' mean fish farming experiences showed 13 years and 12 years for the beneficiaries and non-beneficiaries, respectively. Fish farming, as the major occupation, has a function of importance attached to it as a source of livelihood. In particular, 65% of the beneficiaries and 52.5% of the non-beneficiaries have fish farming as their major occupation and are thus likely to commit more number of hours, efforts and loans towards the success of the farm enterprises.

Cooperative Society involves a social participation that helps farmers to pool their resources to have access to fisheries inputs and insights into their fishing issues. Membership of the cooperatives is therefore a factor which influences the adoption of improved fisheries technologies and poverty alleviation. In particular, 87.5% of the beneficiaries were co-operators while 62.5% of the non-beneficiaries were not in any cooperative society, which may be the reason for not benefiting from any source of loan. This is in line with Akinbile (1998) that the position of the groups ensures that members gain benefits from it in such that they will not have derived individually if they were acting alone.

The respondents earned their incomes from the sales of fish, fish products and

farm produce. It was therefore pertinent that the respondents brought in more profits to alleviate poverty. The yearly estimated income showed that 65% of the beneficiaries and 42.5% of the non-beneficiaries earned well over ₦2.5 million. In more specific, 2.5% and 7.5% of the beneficiaries and non-beneficiaries were earning between ₦500, 000 and ₦999, 999. This is in agreement with the observation of Sirkin (1995) who stated that the established indicators abound to lend credence to the fact that about 80% of Nigeria's over 100 million population are barely existing even below the internationally recognized poverty line of \$1 (About ₦135) per day, lacking a combination of food, shelter and clothing, and operating within a extreme poverty bracket.

The results showed that majority of the respondents obtained credit worth ₦100,001 to ₦150,000 in the study area, while 40% obtained the loan in 2007, and this was probably a result of the new transition (change of name from community bank to microfinance bank). The credit obtained by the fish farmers had a significant relationship on aquaculture development by increasing overall yield (97.5%), revenue (100%), and reducing rural-urban migration (100%), as revealed by the beneficiaries. The implication of this was that most of the farmers would use the obtained credit for the expansion of their fisheries enterprises. Meanwhile, the rate of interest may determine the extents and duration of borrowing (Ijere, 1998).

Although the study has revealed that aquaculture is a profitable business in the study area, it appears that opportunities still exist for increased income if the constraints identified by the fishermen are addressed. These include the lack of sufficient fund and the high cost of feeding.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, it can be concluded that Microfinance Bank Loan in Aquaculture has a great potential to increase fish production, fishermen income, and livelihood of the populace, if the loan given policies are placed rightly and administrative bottlenecks are eliminated. In addition, the socio-economic features of the aquaculturists have been fully considered and the constraints identified (high cost of feeding, poor marketing channel, lack of adequate capital and high cost of investment, among others) in this study to the barest minimal level.

Hence, the following are recommended based on the findings of this study:

- The government should increase the amount of loans allocated to the agricultural sector and invariably the fisheries sector.
- The government should see the granting of loan to aquaculture sector and the monitoring of the loan to ensure that it is used for what it is meant for.
- Credit should be made available from other sources and even from the non-governmental organization at very low interest rates.

- Banks should provide package with a reasonable amount to be disbursed to farmers to help them increase production.

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