POTENTIAL OF FISH FARMING TO POVERTY ALLEVIATION IN EKITI STATE, NIGERIA

ADEDAPO, AYODEJI OLUWAMUYIWA, ALABI, OLAJUMOKE OLANREWAJU

Abstract: The purpose of this study is to assess the potential of fish farming to poverty alleviation in Ekiti state, Nigeria. Multistage sampling technique was used to elicit information from 120 respondents from the selected Local Government Areas with the use of structured questionnaire. Descriptive statistics, gross margin analysis and profitability ratio was used to analyze the data collected. The study shows the respondents mean age of 38.3 years and more than half were male, married, part-time fish farmers with more than ten years of farming experience and the main marketing channel are restaurants and hotels. The result of the budgetary analysis revealed that average total cost of N507,078.61 was incurred, total revenue of N 852,000.00, gross margin of N497,893.39 and net farm income of N344,921.39. The profitability ratio gave a benefit-cost ratio of 1.68, rate of return of 0.39, gross revenue ratio of 0.59 and expense structure ratio of 0.43. This is an indication that fish farming is profitable in the study area. The constraints perceived by most of the fish farmers are high cost of fish feed and price fluctuation of fingerlings. The significant level of profit obtained from the study is an evidence that it has the potential in alleviating poverty in the study area as well as the whole nation thus; government should provide credit facilities with little interest rate to fish farmers.

Keywords: fish farming, poverty alleviation, marketability, profitability.

Introduction: Aquaculture is the world's fastest growing food production subsector [20]. It's growing at an annual rate of 8.9% since 1970, contributes about 1% to Nigerian GDP and about 3.24% to Agriculture GDP as well as the world economy. Fisheries and aquaculture provide employment for over 41 million people, majority of which live in the developing countries [10]. Fish is eaten by average Nigerians because is the cheapest source of animal protein and it accounts for about 40 - 50% of the total animal protein intake of the people especially in the rural areas where resources are very poor [7] [17]. The average fish consumption in Nigeria is about 9.8 kg/caput and the demand for fish is about 1.4 million metric tons per annum [18] whereas in 2007 Nigeria produced approximately 600,000 metric tons of fish [8]. Fish demand was about 2.66 million metric tons in this same year which lead to importation of approximately 740,000 metric tons in other to meet fish demand [19]. This was in agreement with the findings of [12] who stated that artisanal fisheries dependence could not meet domestic fish demand in Nigeria.

Domestic fish supply in Nigeria needs to be increased by about 700,000 – 800,000 metric tons per year in order to abolish fish importation dependence and also meet the demand of domestic market. Aquaculture has the potential of expanding the resource base for food production and help to reduce the pressure on conventional sources of fish that are harvested faster than they can be regenerated [21] and also the right step towards arresting the demand-supply fish deficit, which involves raising fish under controlled environment such as earthen ponds, concrete ponds or plastic tanks where feeding, growth, reproduction and health are closely monitored which are now competing with fish importation [6] [1]. Marketing, packaging and distribution of fish is as important as fish production. It involves all activities carried out from the farm to the final consumers. Such activities include fish collection, processing, preservation, transportation, marketing, packaging and utilization [5].

Aquaculture has a lot of potentials, not only in reducing malnutrition and poverty but also serve as source of foreign exchange for the country. It provides possible socio-economic alternatives for fish farming such as low-cost, small scale, usage of family labour or high cost intensive operation. This provides opportunities for both the poor and the rich to improve their livelihood apart from job opportunities [15] and also help to reduce the constraints of food supply and security [2]. It is used in provision of raw material to industries [16] and some commercial by product obtained from fish are processed into economic and valuable product such as fishmeal, feeds amino supplement , fish oil, coal oil, fertilizers, glue, soap and so on.

It has been shown that Nigeria can eliminate fish importation by domestic production which helps in job creation, poverty reduction and also to ease payments balance deficits [3]. Therefore, it is essential to examine the potential of fish farming to poverty alleviation in relation to its efficiency, marketability and profitability. The contribution of fish farming to the economy can be enhanced and sustained with proper analysis, marketability and profitability. The objectives of this study is to

ascertain the socio economic characteristics of fish farmers, marginal returns, marketing channel and profitability of fish farming in Ekiti state Nigeria.

Materials And Methods:

Study area: This study was carried out in Ekiti State, Nigeria which lies within the tropics between longitudes 4°45[1] and 6°45[1]East of Greenwich meridian and latitude 6°15[1]and 8°5[1]North of equator. The state experiences a typical tropical climate with two different seasons, raining season between April and October and dry season between November and March. The State shares boundary in the South with Kwara and Kogi States, in the east by Ondo State and west by Osun State. Having population of 2,384,212, which represent about 1.7% of the nation's total population with covered land area of 6,353 km^2 [11] [9], average annual rainfall ranges between 2000 mm - 2400 mm, the temperature range from 20°C - 27°C and 60% relative humidity, with sixteen (16) Local Government Areas.

Sampling technique: Multistage sampling technique was used to select and interviewed respondent for this study. Eight Local Government Areas were purposively selected due to number of fish farms. The list of registered fish farmers in the local government areas were collected from the Ministry of Agriculture and Natural Resources. Fifteen respondents were randomly selected from each of the selected Local Government Area, thus making a total of 120 respondents. Well structured questionnaire was used to elicit information from the respondents and the secondary data used were journals, magazines and internet.

Methods of data analysis: Data were analyzed with the use of descriptive statistics to determine the socio economic characteristic of the respondents like frequency, percentage and also net farm income, gross margin analysis and profitability ratio to achieve the objectives of the study.

Gross Margin = Total Revenue – Total Variable Cost

Total Cost = Fixed Cost + Variable Cost

Net Farm Income = Total Revenue – Total Cost

Benefit Cost Ratio = $\frac{\text{Total Revenue}}{\text{Total Cost}}$

Expense Structure Ratio = $\frac{\text{Fixed Cost}}{\text{Variable Cost}}$

Rate of Returns = $\frac{\text{Net Returns}}{\text{Total Cost}}$

Gross Ratio (GR) = $\frac{\text{Total Cost}}{\text{Total Revenue}}$

Result And Discussions:

Socio-economic characteristics: Table 1 reveals the socio economic characteristic of the respondents. The age ranged from 22 to 73 years with a mean age of 38.3 years whereas 36.67% of the respondents were within the active age range of 31–40 years, 35% of the respondents were within the age range of 41–50 years, 16.67% were below 20 years while 11.66% were above 50 years. There are more male fish farmers (69.17%) than the female (30.83%) and 79.17% of them were married. Most of them are part-time fish farmer (71.67%) and more than half (56.67%) of the respondents' primary occupation is civil service. 66.67% of the farmers have between 10–20 years of farming experience, 44.17% of the farmers are medium fish farmer, 37.5% uses concrete tank while 35% uses earthen pond.

Table 1. Socio economic characteristics of respondents

Variable	Freq (N=120)	Percentage (%)
Age (years)		
Below 30	20	16.67
31 – 40	44	36.67
41 – 50	42	35
Above 50	14	11.66
Gender		
Male	83	69.17
Female	37	30.83
Marital Status		
Single	25	20.83
Married	95	79.17
Household Size		
Below 5	42	35
5 – 10	64	53.33

Above 10	14	11.67
Primary Occupation		
Farming	28	23.33
Civil Servant	68	56.67
Business	24	20
Farm Size		
Small	30	25
Medium	53	44.17
Large	37	30.83
Mode of fish Farming		
Full-time	34	28.33
Part-time	86	71.67
Type of Pond		
Earthen Pond	42	35
Concrete Tank	45	37.5
Plastics Tank	20	16.67
Both Earthen and Concrete Tank	13	10.83
Years of Experience		
Below 10	34	28.33
10 – 20	80	66.67
Above 20	6	5

Source: Field survey, 2014.

Market channel for fresh fish: Figure 1 shows the various marketing channels of fresh fish in Ekiti states. Most of the fish farmers (62 %) sell to restaurants and hotels which depicts that there is high demand for fresh fish by restaurants and hotels due to evening relaxation delicacies (pepper soup). 18% of the fish farmers sell to wholesalers/retailers, 12% of the fish farmers sell to processors and this was due to the presence of fewer processing industry in the study area and desire of the farmers to maximize profit while 8% of the fish farmers sell directly to consumers.

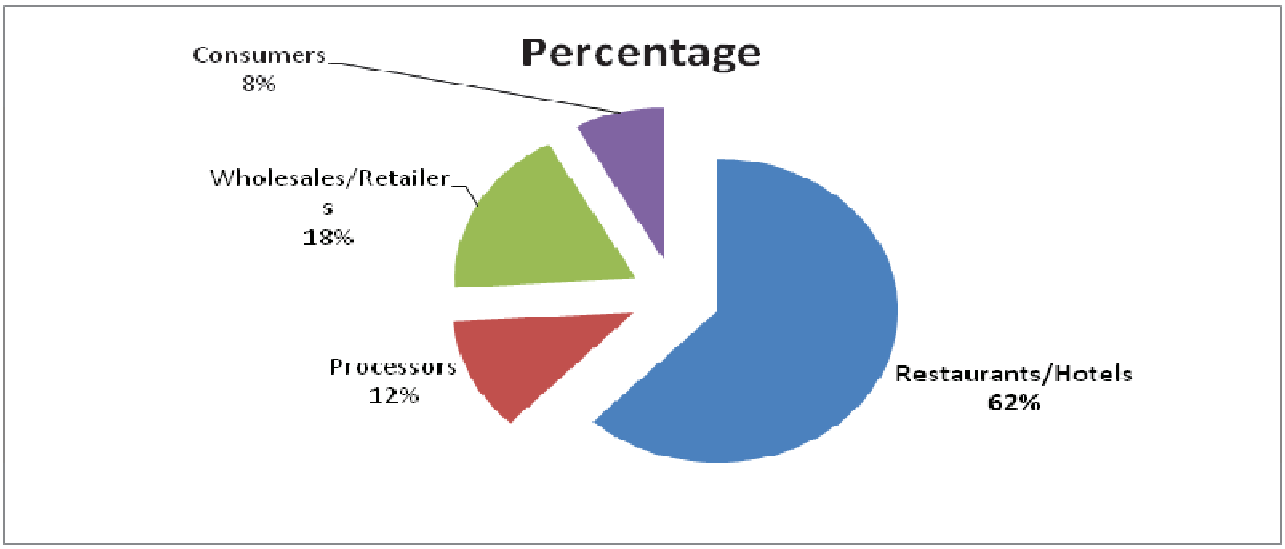

Fig. 1 Market channel of fresh fish

Cost and Return of Fish Farming: Table 2 reveals the estimate of cost and return analysis made from fish farming in the study area using average cost (Fixed and Variable cost) and yield data generated by

each of the respondents per cropping season. The average cost of fresh fish was N550 per kg, total cost incurred on fish farming in the study area was N507,078.61 and total revenue was N852,000. This finding is in agreement with [13] who stated that huge amount of money is being incurred on purchase of fish feeds and fingerlings. The Net Farm Income was N344,921.39 which depicts the difference between the total revenue and total cost. Gross margin was N497,893.39 which indicate the differences between the total revenue and variable cost. This study shows that fish farming in the study area was profitable and it agrees with the findings of [4] [13] who observed that fish farming is profitable with little capital investment and table 3 also confirmed the Profitability ratio of this study.

Table 2 Cost and Returns of fish farming

Variable cost	**Amount (N)**
Liming	1380.50
Fertilizer	775.11
Fingerlings	30,000.00
Netting Pond	3951.00
Labour	15,000.00
Treatment/Medication	3,000.00
Feed	300,000.00
Total Variable Cost	**354,106.61**
Fixed cost	
Pond Construction	150,271.00
Other Farm Implements	2,721.00
Total Fixed Cost	**152,992.00**
Total Cost	507,078.61
Average cost of Fish (kg)	550
Total Revenue	852,000.00
Net Farm Income	344,921.39
Gross Margin	497,893.39

Source: Field survey, 2014

Profitability and Viability Estimate of Fish Farming: Table 3 revealed the profitability and viability estimate of fish farming in the study area. The Benefit Cost Ratio was 1.68 and this indicate that fish farming is profitable according to rule of thumb project evaluation which stated that any business with benefit cost ratio higher than one means its profitable, equal to one means break-even while less than one indicate losses [14]. The Gross Revenue Ratio was 0.59 which implies that from every N1 returns to fish farming, 59kobo is being spent. The Rate of Returns was 0.39% and this shows that for every N1 invested into fish farming 39 kobo was gained by fish farmer. The Expense Structure Ratio was 0.43 which implies that about 0.43% of the total cost of production made up of fixed cost component and this makes fish farming a valuable venture because increase in production with variable cost also leads to increase in total revenue while the fixed cost remain constant.

Table 3 Profitability Ratio

Ratios	**Value**
Benefit Cost Ratio	1.68
Expense Structure Ratio	0.43
Gross Revenue Ratio	0.59
Rate of Returns	0.39

Source: Field survey, 2014

Conclusion: The study was carried out to assess the potential of fish farming to poverty alleviation in Ekiti state, Nigeria. The findings show that the age of the respondent ranged from 22 - 73 years with the mean age of 38.3 years whereas most (71.6%) of the respondents fall between the age range of 31 – 50 years which implies they are within the active age range. There are more male fish farmers (69.17%) than the female (30.83%) and 79.17% of them were married. Most of them are part-time fish farmers (71.67%) and more than half (56.67%) of the

respondents' primary occupation is civil servant. 66.67% of the farmers have between more than 10 years of farming experience, 44.17% of the farmers are medium fish farmer, 37.5% uses concrete tank while 35% uses earthen pond. 62% of the farmers sell directly to restaurants/hotels while only 18% sell to wholesalers/retailers. This indicates that the main marketing channel is hotel or restaurant because of high demand for fresh fish by restaurants and hotels due to evening relaxation delicacies (pepper soup). The empirical results show that, an average Total Revenue of N852,000.00 and Net Farm Income of N344,921.39. The rate of returns in fish farming in the study area is 0.39 and this shows that for every N1.00 invested, 39kobo is gained by the farmer and a gross revenue ratio of 0.59 indicates that for every N1.00 return to fish farm enterprise, 59kobo is being spent and this confirmed profitability of fish farming in the study area. Based on the findings, we draw the following conclusions from the study: Firstly, fish farming is a profitable investment considering the size of total revenue obtained from the study. Secondly, the farms were fairly efficient in use of their resources considering the size of technical efficiency obtained. Thirdly, it is evident that fish farming is capable of creating employment opportunity, increase the level of income and improve the living standard of the people. However, feeds were found to be the major factor (input) affecting the output of fish farming in the study area. Lastly, the profit level observed is similar to the improvement of environmental efficiency among the fish farmers. Base on the findings of this study the following recommendations are propose; government should embark on the construction of rural feeder roads for easy accessibility of fish in the rural area. Introduction of minimum price policy for fish production to augment the benefits gotten from fish farming. Fish farmer's association should make effective use of group formation in assessing credit facilities necessary to increase their scale of production and marketing. This will enhance the continual availability of fresh fish products as and when due. There is the need for research focus on packaging and value addition of fish and fish products.

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Adedapo, Ayodeji Oluwamuyiwa/Post Graduate Student/Dept of Extension Education/
Dr Balasaheeb Sawant Konkan Krishi Vidyapeeth/ Dapoli - 415 712 /
Dist: Ratnagiri (Maharasthra State) India/Dapo.ayomuyiwa@gmail.com
Alabi, Olajumoke Olanrewaju /Lecturer/Dept of Agricultural Economics and Extension/
Faculty of Agricultural Sciences/ Federal University Oye Ekiti/ P.M.B 373 Oye Ekiti/
Ekiti State/Nigeria/jumexy_22@yahoo.com