Original Research Article

Profitability Analysis of Fish Farming in Ese-Odo Local Government Area of Ondo State, Nigeria

***Ikpoza, E.A. and Elijah, K.**

Department of Agricultural Economics and Extension
Delta State University
Abraka, Delta State, Nigeria

*Corresponding Author: eguonoerih@yahoo.com

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Abstract

The profitability analysis of fish farming for the support of the ever growing population of people in terms of food provision is critical to national food security. This study was conducted to investigate the profitability of fish farming in Ese-Odo Local Government Area of Ondo State by examining the socio-economic characteristics of fish farmers in the study area, computing the profitability indices of fish farming, and identifying the constraints which affected fish farmers in the study area. Primary data obtained from seventy five sampled respondents were analyzed using descriptive statistical tools and budgetary analysis procedures such as Net Farm Income (NFI) and profitability ratios. The results showed that the male respondents dominated fish farming in the study area. Most of the fish farmers were middle-aged, and consequently likely to be more apt to learn the best methods of fish farming. It was also observed that there were more married people in fish farming within the study area, compared to single individuals. Most of the respondents were learned and therefore better placed to adopt new technologies, relatively new to the business (1-3 years' experience), had household sizes of 4-6 persons, and farm sizes of 1.6 to 2.5 hectares. An aggregate net farm income (NFI) of ₦15,144,400 and a gross margin ratio of 55.0% were realized, and these imply that fish farming operations in the study area were profitable. The study also showed that profitability of fish farming in the area was hindered by problems like inaccessibility of land, low farming experience, and high transportation costs. It was concluded that fish farming business in the area has great prospects.

Keywords: Fish farming, profitability, net farm income, gross margin ratio

Introduction

Fish farming is one of the various business opportunities any business minded Nigerian can look into. Fish farming is known as pisciculture in the academic world. It is a major form of aquaculture. Fish farming involves raising fish commercially or subsistently in tank or in enclosure (Aminu, 2007). According to Odife (2002), Nigerian agriculture provide between 80% and 90% of the

country's food need. It is estimated that over 170 people are engaged in fish farming in Ese-Odo Local Government area of Ondo State.

This study examined the profitability analysis of fish farming in Ese-Odo Local Government Area of Ondo state. The specific objectives were to:

i. determine the socio economic characteristics of fish farmers in the study area,
ii. determine the source of inputs of the fish farm in the study area, and
iii. examine the profitability in fish farming.

Methodology

The study area is Ese-Odo Local Government Area of Ondo state, Nigeria. Ese-Odo comprises of the following communities; Kiribo, Sabomi, Igbobini, Igbotu, Oju Ala, Ilu Agbo, Igbekebo and Agadagba. Ese-odo has its headquaters in the town called Igbekebo.

It has an area of 762km^2 and a population of 154,978 as at the 2006 national population census. Ese-odo has a tropical climate marked by dry and rainy seasons, with a rainfall period which extends from April to October, and dry season period from November to March each year.

A two-stage sample procedure was used to select respondents for the study. The first stage involved the purposive sampling of six out of the eight communities. These six communities were used because fish farming was more prevalent in them. These communities: were Kiribo, Igbotu, Sabomi, Igbekebo, Igbobini and Oju ala. In the second stage, 70% of the farmers in each selected community were randomly selected to arrive at a total number of 75 fish farmers which were used for this study. Primary data were collected using a structured questionnaire whose questions were based on the objectives of the research study.

The first and second objectives were achieved using descriptive statistics such as means, modes, and frequencies, while budgetary analysis procedure such as Net Farm Income (NFI) and profitability ratios were used to achieve the third objective.

Net Farm Income (NFI)

Net Farm Income was obtained by subtracting Total Cost from Total Revenue in Nigerian Naira (₦). Hence, NFI = π = TR-TC

Where; TR = Total Revenue
TC = Total Cost
TC = Total fixed cost + Total Variable Cost

TR = P x Q

Where; P = Unit Price of Output (₦)

Q = Total Quantity of Output (kg)

Profitability Ratios

The profitability ratios used in this study to assess fish farmers' ability to generate earning compared with their expenses and other important costs incurred during a specific period included:

i. Gross Margin Ratio (GMR):

$$\text{Gross Margin Ratio} = \frac{\text{Gross Margin}}{\text{Net sales}}$$

Where; Gross Margin = Net sales – Cost of goods

Net sales = Gross sales – Any Returns/Refunds

A business with a Gross Margin Ratio of 70% or more was considered highly profitable. If GMR was at least 50% but less than 70%, it was regarded as profitable. A GMR < 50% was regarded as not profitable.

ii. Profit Margin Ratio (PMR):

$$\text{Profit Margin Ratio} = \frac{\text{Net income}}{\text{Net sales}}$$

Where; NET Income = Total Revenue – Total Expenses

Net sales = Gross sales – Any Returns/Refunds.

If profit margin ratio was higher than that of the previous year/season, it meant that the fish farmers reduced expenses and were able to convert more of their sales into profit.

Results and Discussion

Table 1 shows the socio-economic characteristics of the respondents. From the Table, 68.5% of the respondents were male, and 31.5% were female. The dominance of male respondents in the fish business in the area is an indication of the popularity of fish farming among the males.

The result of the study shows that 30.1% of the respondents were aged 41-50 years, 28.8% were aged 31-40 years while 17.8% were aged 20-30 years. This implies that most of the fish farmers were middle aged, and were consequently likely to be more apt to learn the best methods of fish farming.

It was shown that majority (78.1%) of the respondents were married thus implying that married people were more engaged in fish farming within the study area, compared to single individuals.

Table 1: Socio-Economic characteristics of Respondents

Variable	Frequency	Percentage	Mode
Gender			Male
Male	50	68.5	
Female	23	31.5	
Age			
21-30	13	17.8	
31-40	21	28.8	
41-50	22	30.1	
51-60	17	23.3	
Marital Status			Married
Single	12	16.4	
Married	57	18.1	
Divorced	4	5.5	
Widowed	0	0	
Education Level			Secondary Education
No formal Education	11	15.1	
Primary Education	19	26.0	
Secondary Education	26	35.6	
Tertiary Education	17	23.3	
Farm Experience			
1-3	30	40.3	
4-6	26	35.6	
7-9	5	6.8	
10-12	8	11.0	
13-15	4	5.5	
Household size			
1-3	21	28.7	
4-6	40	54.8	
7-9	4	5.5	
10-12	8	11	
Farm Size(Ha)			
1.0-1.50	24	32.8	
1.60-2.50	26	53.6	
2.6-3.50	4	5.5	
3.6-4.5	8	11.0	
4.6-5.5	6	8.2	
5.6-6.5	5	6.8	

Majority (84.9%) of the respondents had primary education (26%), secondary school education (35.6%), or tertiary education (23.3%), and so had an edge for better adoption of technologies. Only about 15% of them had no formal education. Level of education is an important variable for increasing adoption of proven innovations (Ozor and Madukwe, 2005

Also in Table 1, as much as 40.3% of the respondents had been involved in fish farming in the study area for only 1-3 years, and 35.6% of them for 4-6 years. This means that a larger proportion (>75%) of the farmers had just entered into the business probably because fish farming may just have been recently introduced to the area, as against the long existing artisanal fishery in the area.

Also in Table 1, as much as 54.8% of the respondents had a household size of 4-6 persons while 28.7% had a household size of 1-3 persons. According to Dawson (2006), household size is important in providing rural farmers with labour required for agricultural activities.

Furthermore from the table, it can be observed that majority of the respondents (53.6%) had a farm size of 1.6-2.5hectares. This implies that the majority of the farmers were small-scale farmers in line with the assertion of Ajieh and Okoro (2015) that small-scale farmers are those whose farm sizes fall between 0.5 and 3.5 hectares.

Profitability Indices

i. Net Farm Income (NFI)

Table 2 shows the aggregate costs of the variable and fixed inputs used by all the respondents. From the table, feeds had the highest aggregate cost of ₦14,605,000 while water had the least cost of ₦45,000. This is as a result of the easy access of water in the area, as the area is very rich in rivers and streams.

Table 2: Profitability of Fish Farming in the Study Area

Variable Inputs	**Variable Costs (₦)**
Fingerlings	470,500
Feeds	14,605,000
Pesticides	127,400
Vaccine	257,700
Labour	756,000
Water	45,000
Tank	140,000
Cement Tank	250,000
Fuel	275,000
Pump	645,000
Vat	60,000
TVC	17,631,600
TR	40,000,000
Fixed Inputs	**Fixed costs**
Land	7,224,000
TFC	7,224,000

NFI = TR – TC

₦40,000,000 – ₦ 24,855,600

NFI = ₦ 15,144,400

The computation showed that the average cost of production was ₦340,487.67, while the average revenue was ₦547,945.21 which gave a net profit of ₦207,457.54 which is considered high.

ii. Gross Margin Ratio (GMR)

$$GMR = \frac{\text{Gross Margin}}{\text{Net sales}}$$

GM = TR-TVC

GM = ₦40,000,000 - ₦17,631,600

GM = ₦ 22,368,400

$$GMR = \frac{₦\,22{,}368{,}400}{₦40{,}000{,}000} = 0.55921 = 55.9\%$$

The gross margin ratio (GMR) was 55.9%. Therefore the result shows that fish farming operation in the study area was profitable.

Table 3: Constraints to fish farming in the study area

Variable	Frequency	Percentage	Mode
Absence of Land	17	23.1	
No Start-up Capital	12	16.0	
Transport Constraint	16	22.3	Farming
Low Farming Experience	21	29.0	Experience
Lack of Technical Knowledge	5	6.8	
High cost of inputs	2	2.8	

Constraints to Fish Farming in the Study Area

The major constraints to fish farming in the study area are presented in Table 3. According to the Table, seventeen farmers (23.1%) did not have land of their own. Consequently, the cost of acquiring land for fish farming practices is likely to have led to an increase in production costs, and thereby reducing the profit, of those farmers. Also shown in the table twelve farmers 16.0% did not have start-up capital. These farmers had to go to financial institutions to obtain loans at high rates of interest. This is in agreement with Anyanwu (2004) and Ifejika *et al.* (2008) who said that the rates of interest that fish farmers have to pay on loans is alarmingly high. Furthermore,

from the table, 22.3 percent of the farmers had to travel long distances to buy livestock feeds. Therefore, the cost of transporting this feeds also reduced their profit.

About 5 farmers(6.8)% in the area did not have enough technical experience, hence they lack the knowledge of the necessary facts like the type of species to culture, the proper managerial skills and management efficiency to run the ponds, the types of feeds and fertilizer to use and in what quantity to apply. These posed hindrances to the profitability of fish farming in the study area. The cost of inputs was high and this was also one of the constraints to some fish farmers in the area.

Conclusion

Fish farming features prominently as a major farming activity in Ese-Odo Local Government Area of Ondo State, Nigeria with majority (68.5%) of the population of fish farmers being male and middle aged. Majority (78.1%) of the farmers was married and majority had primary education. Only about 15% of them had no formal education. Larger proportion (about 75%) of the farmers had just entered into the business probably because fish farming may just have been recently introduced to the area, as against the long existing artisanal fishery in the area.

Majority of them (54.8%) had a household size of 4-6 persons while 28.7% had a household size of 1-3 persons. Furthermore, majority of the respondents (53.6%) had a farm size of 1.6-2.5hectares. It was also discovered that Fish farming is a profitable business venture in the study area with an aggregate net farm income NFI of ₦15,144,400 and a gross margin ratio of 55.9%. Conclusively, 29% of the respondents had a constraint of low farming experience, 222.3% had a constraint of transportation while 23.1% had a constraint of absence of land.

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