



PROFITABILITY OF CATFISH PRODUCTION IN NIGERIA'S FEDERAL CAPITAL TERRITORY.

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ABSTRACT

The study examined the profitability of catfish production and also identified the constraints in catfish production in FCT, Nigeria. Simple random sampling technique was used to select one hundred respondents for the study. Well-structured questionnaires were administered to catfish farmers in the study area. The analytical tools for the study included descriptive statistics and profitability measures such as gross margin, net farm income and return on investment. The study shows that the enterprise is male dominated (86 percent) and most (84%) of the famers are between 25-44 years of age. All the farmers in the study area have some level of formal education and 48% having up to tertiary education. The estimated profit of the enterprise was N209,000.00 and a 0.862 return on capital for the enterprise. Several constraints facing the enterprise in the study area were identified among which are: high cost of feeds, lack or inadequate capital, poor extension services and information dissemination, poor access to credit, inadequate fingerlings, theft, high cost of construction materials and lack or high cost of other inputs. The study therefore recommends that the government should encourage fish production in the study area by subsidizing factor inputs as well as providing credit facilities to fish farmers in order to increase their level production. More so, further research should be carried to develop cheaper but good quality feeds for catfish production.

Keywords: Profitability, Catfish, Production.

INTRODUCTION

Fish is one of the cheap and commonly available source of good protein for many in Nigerians. Aside the dietary value, fish is a source of fish oil, a raw material for pharmaceutical companies, provision of livestock feeds, and provision of employment for different categories of people in the area of fisheries production, processing, packaging and marketing (Fleuren, 2006). Rana (2007) noted that the limited supply of fish from marine and fresh water capture fisheries cannot meet the growing world demand for aquatic products (Rana, 2007). Aquaculture accounts for about 50% of the present global fish consumption

(Odukwe, 2007). Thus there is the need for the development and strengthening of aquaculture as important supplement to and substitute for dwindling yield from the wild (FAO 2007). Fish farming has been recognized as a viable means of increasing domestic fish production (Atanda, 2007) and most recent investment in aquaculture has been targeted towards catfish farming (Abdullah, 2007).

Also, in spite of the abundant fishery resources in Nigeria, local production has failed to meet the country's fish demand (FAO, 1995). Considering the observed high level of catfish farming in federal capital territory of Nigeria, it is imperative to carry out this kind of survey so



as to improve the knowledge base, and improve on the limited literature in the subject area. A study such as this can provide some of the information needed by policy makers to improve productivity of catfish farming in Nigeria as a good fish farming development policy will require data from many parts of the country (Singh, *et al.*, 2009).

Also, despite the potentials of fish farming to improve livelihoods in communities of Nigeria, it has not been fully explored as a strategy to reduce poverty level due to the constraints facing the subsector and discouraging new entrants. These constraints have not been comprehensively identified and reported. Low productivity, high establishment costs, high farm level losses and inefficient marketing often constitute the bulk of the problems fish farmers usually complain about (Dauda, 2010). The low level of productivity result from lack of appropriate production knowledge and skills, sub-optimal stocking and/or overstocking as well as poor fish population control method (Dauda, 2010). Complications arise from high capital requirement for establishing a fish farm, especially for excavation, stocking of fingerlings and installation of productive chain link. Losses at farm also arises from predators such as snakes, monitor lizards, birds and improper harvesting, post-harvest and processing techniques, inefficient marketing due to lack of farmers' investment in marketing activities, which might reduce the revenue generated by farmers along the fish value chain (Agbebi and Fagbenro, 2006). Furthermore, several authors (Adeogun *et al.*, 2007; Ugwumba, 2005; Ugwumba and Nnabuike, 2008) opined that inadequate quality fish seed for stocking, dearth of information on modern technologies in aquaculture due to poor extension services, lack of fishermen's cooperative societies, poor infrastructural facilities, poor funding by government and high cost of fish feed are some of the major

constraints faced by the aquaculture industry in Nigeria. All these problems can go a long way to reduce the income generating potentials of the enterprise and in turn affect the livelihoods of the farmers. This study seeks to determine the level of profitability of the enterprise and also identify the actual constraints faced by catfish farmers in the study area.

METHODOLOGY

Study Area: The study was carried out in the Federal Capital Territory (FCT), Nigeria. Abuja as part of the FCT, is the capital city of Nigeria, the territory is located in the North central geo-Political zone of the country and occupies a land area of 7,753.9 sq. km. The area lies between latitudes 8.25° and 9.20° North of the equator and longitudes 6.45° and 7.39° East of the Greenwich Meridian. The area has an estimated population of about 3,840,000.

Sampling Techniques and Data Collection

Primary data were collected with the use of well-structured questionnaire administered to hundred (100) catfish farmers for the study. Simple random sampling technique was employed in selecting respondents for the study in the Federal Capital Territory, Nigeria. The study population includes all catfish farmers in FCT. The data obtained were from 2022 production cycle.

Secondary information in this study were obtained by reviewing both print and electronic publications (library and online materials)

Analytical Technique

Simple analytical tools such as descriptive statistics which involved the use of frequency distribution tables, averages (mean) and percentages were used for result analysis. Also, Net Farm Income (NFI), Gross Margin (GM) and Profitability ratios were used to determine the cost and returns of catfish production in the



study area. Gross margin (GM) is the difference between the gross farm income (GI) and the total variable cost (TVC).

1. NET FARM INCOME (NFI)

According to Olukosi and Erhabor (1989), NFI gives the overall level of profitability of an enterprise by putting both fixed and variable cost into consideration and subtracting the cost from total revenue.

$$\text{NFI} = \text{TR} - (\text{TVC} + \text{TFC})$$

$$\text{NFI} = \text{TR} - \text{TC}$$

Where:

NFI = Net Farm Income

TFC = Total fixed cost

TVC = Total variable cost

TC = Total Cost

TR = Total revenue

2. GROSS MARGIN (GM)

Gross margin is the difference between the gross farm income and the total variable cost (Olukosi and Erhabor, 1989).

$$\text{GM} = \text{TR} - \text{TVC}$$

Where:

GM = Gross Margin

TR = Total Revenue

TVC = Total Variable Cost

3. PROFITABILITY RATIOS

Profitability ratios are financial measures that shows the business' ability to generate income vis-à-vis its expenses and other costs incurred during a specific time period (Bussinessdictionary.com, 2020).

The profitability ratios that will be used to determine the economic performance of respondents' enterprises are:

i. RATE OF RETURN (ROR):

$$\text{ROR} = \text{NR} / \text{TC}$$

Where;

NR = Net Revenue (also known as Net Farm Income, NFI)

TC = Total Cost

ii. GROSS RATIO (GR);

$$\text{GR} = \text{TC} / \text{TR}$$

Where;

TC = Total Cost

TR = Total Revenue



RESULTS AND DISCUSSION

Socioeconomic Characteristics of Respondents

Table 1: Socioeconomic Characteristics of Respondents

Characteristic	Frequency	Percentage
Sex		
Female	14	14
Male	86	86
Total	100	100
Age		
25-34	28	28
35-44	56	56
Above 44	16	16
Total	100	100
Marital status		
Single	20	20
Married	80	80
Total	100	100
Family size		
1-5	68	68
>5	32	32
Total	100	100
Educational level		
Primary	14	14
Secondary	38	38
Tertiary	48	48
Total	100	100
Years of Experience		
<5	56	56
>5	44	44
Total	100	100
Member of cooperative group		
Yes	26	26
No	74	74
Total	100	100
Average pond size		
<100m ²	46	46
>100m ²	54	54
Total	100	100

**Number of ponds**

1-2	38	38
3-5	42	42
>5	20	20
Total	100	100

Purpose of production

Subsistence	0	0
Commercial	100	100
Total	50	100

Source: field survey 2023

The study shows that most of the persons involved in catfish farming in FCT were males (86%) and 12% are females as shown in table 1. Twenty-eight percent of the farmers were between the ages of 25-34 years, 56% between the ages of 35-44 years and 16% above 44 years of age. This age distribution indicates that there are considerable number of youth and young adults involved in catfish farming. In terms of marital status; eighty percent of the respondents were married while twenty percent were single or unmarried. Majority of the catfish farmers had small family sizes as 68% had family size less than five members while only thirty-two percent had family size of more than five members. 14% of the respondents only had primary education, 38% had up to secondary education while 48% of the farmers were educated up to the tertiary level. 56% had less than five years catfish farming experience while

the rest (44%) had more than five years catfish farming experience. Of the catfish farmers interviewed only 26% belong to cooperative societies, the rest were not members of cooperative societies. 46% of the farmers use average pond size of less than 100m² while the rest (54%) use average pond size of over 100m². 38% of the farmers had between 1-2 ponds, 42% had 3-5 ponds and 20% had more than 5 ponds. All the catfish farmers interviewed were all involved in catfish production for commercial purpose.

COST AND RETURNS OF CATFISH FARMING IN THE STUDY AREA

The estimates of the cost and return of the catfish farming using averages of both costs incurred and output obtained from each of the farmer in a farming season. This is shown in table 2.

**Table 2: Average Cost and Return of Catfish Farming in the Study Area per farming season**

S/N	Item	Quantity	Unit price (₦)	Values (₦)	Percentage of total cost (%)
A	Output	500 kg	900	450,000.00	
B	Variable inputs				
1	Stocking			17,500	7.3
2	Liming			5,000	2
3	Feeding			110,500	45.85
4	Transportation			10,000	4.1
5	Cost of fertilizer			4,000	1.6
6	Labour			15,000	6.2
7	Miscellaneous			7,000	2.9
	Total variable cost (TVC)			169,000.00	70
	Gross Margin (TR - TVC)			281,000.00	
C	Fixed inputs				
1	Pumping machine			10,000	4.1
2	Land			25,000	10.4
3	Bore hole			17,000	7
4	Ponds and equipment			20,000	8.3
	Total Fixed Cost (TFC)			72,000.00	29.9
D	Total cost			241,000.00	
	NFI (GM - TFC)			209,000.00	

Source: Field Survey, 2023.

The total output from an average fish pond was estimated to be about 500kg while the price per kg of catfish was on the average determined to be ₦900.00 thus giving a gross return of ₦450,000.00 per production cycle of about five months. On the other hand, the gross margin and profit (or net farm income) were found to be ₦281,000.00 and ₦209,000.00 respectively. The result shows that the returns accrued from fish production are higher than the cost, indicating that the enterprise is profitable. This finding is similar to that of Benson (2017) who noted that catfish farming is profitable. Table 2 also reveals the cost of feeds accounted for the largest proportion (45.85%) of the cost of catfish farming in the study

area in a farming cycle. This finding is in agreement with Louise (1977) who posited that the cost of feed account for a large proportion of the total cost of production. In terms of the variable inputs, the cost of feed is followed by cost of stocking (7.3%) and cost of labour (6.2%). The fixed cost of production consists of cost of pumping machine, land, borehole, pond and equipment.

The results also show that the average total variable cost was ₦169,000.00 which accounts for 70% of the total cost. On the other hand, the average total fixed cost was ₦72,000.00 which amounted to 30% of the total cost.



VIABILITY OF CATFISH FARMING IN THE STUDY AREA

Table 3. Profitability Ratios

Ratio	Value
Rate of Return	0.867
Gross Ratio	0.54

Source: Field Survey, 2023.

The results in table 3 shows a ROR of 0.867, this means that rate of return per capital invested was 0.867 and that for every naira invested, 86.2 kobo was gained by the producer, revealing a more than 50% return per naira invested. This finding is in congruence with that of Atanda (2007) who reported that catfish attracts premium price in Nigeria and with a

high return on investment. Also, a gross ratio of 0.54 indicates that for every one naira returned to the catfish farm enterprise, only 54 kobo is being spent. This is also in line with the position of Emokaro and Ekunwe (2009) who noted that there is resource use efficiency and also viability of catfish farming in Nigeria.

CONSTRAINTS TO CATFISH FARMING IN THE STUDY AREA

Table 4. Constraints faced by fish farmers in the study area

Constraints	Number of farmers affected	Percentage (%)
High cost of feeds	78	78
Lack or inadequate capital	54	54
Poor or inadequate extension services and information dissemination	36	36
Poor access to credit	36	36
Inadequate fingerlings	30	30
Theft	30	30
Lack and high cost of inputs	24	24
High cost of building materials and pond construction	22	22
Lack of quality fingerlings/ fish breed	20	20
High mortality rate	20	20



Problem of water supply	18	18
Cannibalism	16	16
High cost of transportation	16	16
Feed production	16	16
Scarcity of brooding stock	15	15
Epileptic power supply	14	14
Inadequate infrastructure	12	12
Expensive cost of facility maintenance	10	10
Lack of technical expertise	8	8

Source: Field Survey, 2023.

The results in Table 3.2 showed the constraints to fish farming in FCT. The major constraints identified in this study are: high cost of feeds (affecting 78% of the catfish farmers), lack or inadequate capital (54%), poor or inadequate extension services and information dissemination (36%), poor access to credit (36%), inadequate fingerlings (30%), lack and high cost of inputs (24%), high cost of building materials and pond construction (22%), high mortality rate (20%), lack of quality fingerlings/fish breed (20%), problem of water supply (18%). Other constraints or challenges facing catfish production in the study area are cannibalism, high cost of transportation, feed production, theft, epileptic power supply, scarcity of brooding stock, inadequate infrastructure, expensive cost of facility maintenance and lack of technical expertise.

These results are in congruence with that of Dauda (2010) who noted that the low level of productivity result from lack of appropriate production knowledge and skills, and also with that of Adeogun et al., 2007; Ugwumba, 2005; Ogwumba and Nnabuike, 2008 which all noted that inadequate quality fish seed for stocking, dearth of information on modern technologies in aquaculture due to poor extension services, lack of fishermen's cooperative societies, poor

infrastructural facilities, poor funding by government and high cost of fish feed are some of the major constraints faced by the aquaculture industry in Nigeria.

CONCLUSION

The study concluded that catfish farming in FCT, Nigeria is quite profitable with good return on investment, it is however constrained by many factors which majorly are; high cost of inputs especially feed, lack or inadequate capital, poor or inadequate extension services and information dissemination, poor access to credit facilities, inadequate fingerlings, high cost of building materials and pond construction, lack of quality fingerlings/ fish breed and problem of water supply.

RECOMMENDATION

Based on this analysis, it is recommended that the government should encourage fish production in the country by subsidizing factors inputs as well as providing credit facilities to fish farmers in order to increase their production. More so, further research should be carried out to develop cheaper but good quality feeds for optimum catfish production.



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