

# Budgetary Analysis and Factors Influencing Profit Level of Culture Fish Enterprises by Gender in Epe Local Government Area of Lagos State, Nigeria

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**Abstract** – Understanding the role that gender plays in fish culture enterprises is critical for designing agricultural policies to increase productivity and enhance economic growth and to reduce poverty. This study was carried out in Epe Local Government Area of Lagos State, Nigeria. The research investigated the budgetary analysis and factors influencing profit level of culture fish enterprises by gender. This was done by examining the socio-economic characteristics of the respondents, the budgetary analysis and also factors influencing the profit of fish farming enterprise. This was achieved through random selection of 149 respondents. The method of analysis used was descriptive analysis to determine the socio economic characteristics of the fish farmers; profitability ratio was applied to examine budgetary analysis, while regression was done to capture the factors influencing the farmers profit level. The results showed that 54.4% were male and 45.6% were female. Majority of the respondents (67.9% male and 55.9% female) were married and (32.1% male and 44.1% female) were in the single category. It also revealed that 23.5% male and 17.6% female went through tertiary education. 43.2% male and 36.8% had about above 6 years experience in the business, 43.2% male and 42.6% female started their business with their own personal savings and 66.7% male and 70.6% female farmers purchased their land.

The beta weight ranged from 0.0107 to 0.3547 for male and 0.0532 to 0.2234 for female. The result shows that out of all (4) independent variables considered, fingerling is the most important input for the male farmers, while for the female fish farmers, feed is the most important input.

It was concluded that the venture is profitable to both gender, and it was recommended that young people mostly female should be encouraged to practice fish farming, and also involve in carrying out research on fish farming as this may help in solving the problem of food security and food sufficiency.

**Keywords** – Budgetary Analysis, Culture Fishing, Gender, Profitability.

## I. INTRODUCTION

Fish farming is an age long livelihood practice in the world. Although fish culture has long existed in Africa, it first started in Nigeria in 1942 (FMANR, 2007).

Fisheries occupy a unique position in the agricultural sector of the Nigerian economy. In terms of Gross Domestic Product (GDP), the fishery sub-sector has recorded the fastest growth rate in agriculture to the GDP. The contribution of the fishery sub-sector to GDP at 2001 current factor cost rose from N 76.76 billion to N 162.61 billion in 2005 (CBN Report, 2005). Fish

constitutes about 41% of the total animal protein intake by average Nigerian hence there is great demand for fish in the country. Nigeria requires about 2.66 million metric tons of fish annually to satisfy the dietary requirement of its citizens (150 million). Regrettably, the total aggregate domestic fish supply from all kind of fish farming is less than 0.7 million metric tons per annum. Nigeria has to import about 0.7 million tons of fish valued at about \$500 million annually to argument the shortfall. This massive importation of frozen in the country has ranked Nigeria the largest importer of frozen fish in African (FMARD, 2011). It is projected that the per capital consumption of fish would be 13.5kg from 2010 to 2015, while projected demand for fish would have increase from 1,430,000 tons in 2000 to 2,175,000 tons in 2015, with supply gap deficit of 1,444,752 tons (FMARD, 2011).

Nigeria has over 14 million hectares of inland water surface, out of which about 1.75 million are available and suitable for aquaculture (FAO, 2006). In Nigeria, aquaculture is predominantly an extensive land based system, practiced at subsistence levels in fresh waters (Anyawu-Akeredolu, 2005). Commercial farming has yet to become widespread (Fagbenro, 2005). At present, most fish farmers operate small-scale farms ranging from homestead concrete ponds (25 – 40 meters) to small earthen ponds (0.02 - 0.2 hectares).

The industry produced over 85,000 tons of fish in 2007 (FDF, 2008).

The local supply consists of productions from the artisanal (89.5% - 85.5%), industrial (5% - 2.5%), and aquaculture (5.5% - 12.0%) sub-sectors (FDF, 2009). However, it has been shown that Nigeria can substitute fish importation with domestic production to create jobs, reduce poverty in rural and peri-urban areas where 70% of the population live and ease the balance of payment deficits (Areola, 2007; FDF, 2005, 2009; Olaoye, 2010).

Understanding the role that gender plays in agricultural production is critical for designing agricultural policies to increase productivity and enhance economic growth and to reduce poverty. Although there is increasing awareness of the importance of including women in agricultural policies, either through explicit programs for women or through mainstreaming approaches, key data gaps still exist that inhibit the development of appropriate policies and monitoring their progress.

The promotion of aquaculture as a development strategy for women has been partially based on the perception that it is an extension of women's domestic tasks (Kelkar,

2001), allowing integration with home gardening, household chores and child care.

In many countries in South Asia and Africa, there is ample scope for increasing women's participation in and income from aquaculture through improved extension services, innovations, policies and institutional practices that are directed towards women (Rahman, 2005). However, women roles in livestock production are characterized by small-scale operation, low capital investment, simple labour-intensive technology. Most importantly is that they are either been ignored or underestimated in efficient input combination (IFAD 2007).

Even though there is no consensus on quantifying the efficient role of women in livestock production, there is clear indication that their contribution is quite significant.

Gender disparities in aquaculture can result in lower labor productivity within the sector and inefficient allocation of labor at household and national levels. In many developing countries, customary beliefs, norms and laws, and/or unfavorable regulatory structures of the state reduce women's access to land and water resources, assets, technology and decision-making (FAO, 2006; Porter, 2006; Okali and Holvoet, 2007). This confines them to the lower end of supply chains within the so-called "informal" sector (Guhathakur ta, 2008). Even though they use aquatic resources, they are rarely consulted in attempts to manage these resources. The differential impacts of and contribution to ecological degradation and depletion of aquatic resources by women and by men are often overlooked. These disparities are likely to be exacerbated by climate change (Brody et al., 2008). While women bear the brunt of the costs of gender inequities, these costs are distributed widely and are a cause of persistent poverty for all members of the society. Addressing gender inequities by improving women's incomes and educational levels, along with their access to information, technology and decision making processes, not only enhances human capabilities of the household but also augments it at the societal level.

Despite all the efforts of National Accelerated fish Production Project (NAFP) in Nigeria toward improving the efficiency of fish farmers as well as to increase per capita income of indigenous fish farmers, the project did not yield expected outcomes due to poor implementation, poor monitoring and evaluation of the project. This study will therefore examine the budgetary analysis of fish production by gender in Epe Local Government Area of Lagos State.

The following research questions guide the execution of this study:

- i) What are the socio economic features of fish farmers by gender?
- ii) Is fish production profitable in the study area?
- iii) What factors account for profit of fish by gender in the study area?

The following are the objectives which will provide answers the research question:

- Describe the socio-economic characteristics of the fish farmers in the study area by gender.

- Determine the profitability of fish farming in the area of study by gender.
- Analyse the factors that influenced the profit level of fish farmers by gender.

## **II. MATERIALS AND METHODS**

The study was carried out in Epe Local Government Area of Lagos State Nigeria. Epe is situated at longitude 6.58° North latitude 3.98° east. Epe lies about 86Kms North-east of the city of Lagos. Epe consist of so many divisions which includes the Eko Aworis. Olomowewe, Ibeju, Lekki, Akodo, Orulu, Magbon-Alade, Oriba, Iwerekim, Iberekedo, Idaso, Orimedu, Olorunkoya, Ojita, Ibonwon, Ode-Ifa, Ofin, Igbesibi and Igbolomi, Awoyaya, among others.

A peculiar feature of Epe is the presence of a long range of hills, which demarcates the coastal town into equal parts.

Fishing and farming form the major occupations of the inhabitants of this area.

Modern Epe is a collecting point for the export of fish, cassava (manioc), corn (maize), green vegetables, coconuts, cocoa, palm produce, rubber, and firewood to Lagos.

Epe is best known for its construction of the motorized, shallow-draft barges that navigate the costal lagoons. By the 2006 Census the population of Epe was 181,409.

Data for this study were mainly primary data. The primary data were collected with questionnaires that were administered to fish farmers in the study area during the field work.

A two stage sampling techniques was employed in this study. First, purposive sampling procedure was adopted in the selection of Epe Local Government Area for the study. This is because of the predominant fish farming activities. A stratification of fish farmers was made from the list of registered fish farmers in the area. This was followed by the selection of 70% of the fish farmers in the list using a stratified random sampling. This account for a true representation of the population since they do not have equal numbers of farmers in the area.

The study population comprises of people with aquaculture or culture fishery in Epe Local Government Area of Lagos State. Samples were drawn from blocks as classified by Agricultural Development Programme of the area. Data were drawn from a total of 149 respondents selected from both gender.

### **Analytical tools**

Various analytical tools were used to achieve the objectives of the study. These include: descriptive statistics, stochastic frontier production function, multiple regression and profitability ratio. Objective 1 was analyzed using descriptive statistics such as mean and relative frequency. For objective 2 budgetary analysis was employed. Objective 3 was analyzed using ordinary least square multiple regression analysis.

### **A. The Regression Model**

The multiple regression model was employed to determine the factors influencing the level of output of the

farmers in the study area. The model is specified as follows

$$Q=f(X_1, X_2, X_3, X_4, X_5, e) \dots \dots \dots \text{Equation 2}$$

Q is fish output in kilogram

X<sub>1</sub> represents the pond size measured in square meter

X<sub>2</sub> is the cost of feeds measured in naira

X<sub>3</sub> represents the cost of fixed inputs in naira

X<sub>4</sub> is the cost of fingerlings measured in naira

X<sub>5</sub> represent gender (male =0, female =1)

e= Error term

**B. Profitability Ratios**

Profitability ratio is a class of financial metrics that helps investors assess a business's ability to generate earning compared with its expenses and other relevant costs incurred during a specific period.

Some examples of profitability ratios are listed and explained below:

**Expense structure ratio (ESR) = FC/VC**

Where, FC = Fixed cost and VC = Variable cost

**Rate of Return on Capital Invested (RORCI) =  $\pi$ /TC**

Where,  $\pi$  = Profit (TR - TC)

**Gross Ratio (GR) = TFE/GI**

Where, TFE = Total farm expenses and

GI = Gross income.

**III. RESULTS AND DISCUSSION**

Table 1: Distribution of Respondents by Gender

Sex	Frequency	Percent	Mean Efficiency
Male	81	54.4	0.92
Female	68	45.6	0.94
TOTAL	149	100	

Sources: Field Survey, 2013.

*Sex of Respondents*

Out of the respondents, 54.4% were male while 45.6% were female. This shows that men are more involved in fishery production, while women are into post-cropping operations like

marketing and processing into consumable product, this is in line with Adeokun *et al.*, (2006) who investigated children's involvement in fish production in waterside local Government Area, Ogun State, Nigeria. Multi-stage technique was used. The findings of the research showed that male children dominated fish catching and net making and mending while the female children were mainly involved in processing. All other activities in which the children were involved were water fetching, fish marketing, fish processing and fish storage among others gave no significant difference on gender basis. Based on the findings, it was recommended that government and non-governmental agencies should come up with special programmes and incentives for revering fishing village's that will ensure effective integration of children into national programmes for food itself sufficiency and poverty alleviation at household and national levels.

Also, from the table it shows that mean efficiency of the farmers were different, i.e the female are more technically efficient though their male counterpart are more involved in fishery production.

Table 2: Distribution of Respondents by Age

Age	Male		Female	
	Frequency	Percent	Frequency	Percent
<30 years	13	16	15	22
31-40 years	20	24.7	13	19.1
41-50 years	29	35.8	22	32.4
>51 years	19	23.5	18	26.5
Total	81	100	68	100

Sources: Field Survey, 2013

*Age of Respondents*

Age is an important factor in traditional Agriculture. It determines farmer's productive ability and consequently his output. This is because farming is still labour intensive in this part of the world and traditional agriculture production system relying on rudiments implements powered by human muscle. Therefore, beyond certain age, farmer's productivity begins to decline. From the table below analysis of age, the modal age for both male and female was 41-50 years, which means that majority of the fishery farmers interviewed was in their middle age and some old. This has effect on productivity.

Olayide (1980) submitted that farming population is ageing thus reducing the effective labour force from agricultural productivity. Result shows that younger people are rarely engaged in farm work as they have migrated to urban areas for non-farming occupation.

Table 3: Marital Status of Respondents

Marital Status	Male		Female	
	Frequency	Percent	Frequency	percent
Married	55	67.9	38	55.9
Single	17	20.9	21	30.9
Widowed	5	6.2	5	7.3
Widower	4	4.9	4	5.9
Total	81	100	68	100

Sources: Field Survey, 2013

*Marital Status of Respondents*

This shows the number of dependents, which fishery farmers have to cater for as part of his responsibility. From the table, majority of the sampled farmers both male and female were married. The married male were 67.9% while their married female counterpart were 55.9%, male singles were 20.9%, while that of the female were 30.9. This may be due to fact that young female are more willing to pay attention to extension agents than their male counterpart. The widowed were 6.2% while 7.4% were widower. The result shows that most of the farmers interviewed have one or more people to cater for and who can also serve as source of family labour.

Table 4: Distribution of Respondents by Household Size

Household Size	Male		Female	
	Frequency	Percent	Frequency	percent
2-4	30	37.1	16	23.5
5-7	45	55.6	41	60.3
>8	6	7.4	11	16.2
Total	81	100	68	100

Sources: Field Survey, 2013



### Household Size of Respondents

The household size is an important socio-economic characteristic because it often times determines how that household size distribution of sampled farmers.

Table 5: Level of Education of Respondents

Educational Level	Male		Female	
	Frequency	Percent	Frequency	Percent
No Formal Education	12	14.8	7	10.3
Primary	20	24.7	22	32.4
Secondary	30	37.0	27	39.7
Tertiary	19	23.5	12	17.6
Total	81	100	68	100

Sources: Field Survey, 2013

### Educational Status of Respondents:

Table 5 shows that 14.8 % of the 81 male respondents had no formal education, while that were 10.3%, 24.7% of the male earned primary education, that of the female is 32.4%. That of the secondary education for both male and female were 37.0% and 39.7% respectively. For Tertiary education, the male were 23.5% while the female were 17.6%. This implies that education plays a significant role in skill acquisition and knowledge transfer. It enhances technology adoption as well as the ability to plan and take risks. The distributions of the educational attainment of the respondents show that most of the fish farmers had secondary education as the highest educational attainment. This result is in conformity with Kareem et, al, (2013) who asserted that educated fisher folks have greater likelihood to understand the working mechanism of the motorized engines and therefore should be able to use it more than the illiterate class of fisher folks.

Table 6: Distribution of Respondents by Years of Farming Experience

Farming Experience	Male		Female	
	Frequency	Percent	Frequency	Percent
<5	24	29.6	25	36.8
6-10	35	43.2	25	36.8
11-15	16	19.8	13	19.1
>16	6	7.4	5	7.4
Total	81	100	68	100

Sources: Field Survey, 2013

### Farming Experience of Respondents

The number of years of farming of fish farmers will determine how he will organized his resources in order to achieve level of production. Munir-Ahmad et al (1999) asserted that more experienced and educated farmers realize a high productive efficiency and this output.

The years of farming experience of farmers affect the level of productivity and efficiency.

Majority of the sampled framers have been in farming operation for a long time.

Table 6 show that 29.6% male and 36.8% female respondents have between less than 5 years of farming experience. About 43.2% of the male and 36.8 of the female had been in the business for between 6 and 10

years; while 20% of both gender them have much long experience (that is between 11 and 15 years) while few of them have a much longer experience. However, the recent involvement might be as a result of State Government is very interested in the commercialization of fish farming in the state and local governments. Thus, government has invested in cash and in kind into the technical knowhow of the respondents through running of training workshops, seminars and extension visits.

Table 7: Distribution of Respondents according to Sources of Credit

Source of Credit	Male		Female	
	Frequency	Percent	Frequency	Percent
Personal Savings	35	43.2	29	42.6
Loans from relative and friend	13	16.0	19	27.9
Bank Loan	3	3.7	4	5.9
Cooperatives	30	37.0	16	23.5
Total	81	100	68	100

Sources: Field Survey, 2013

### Distribution of Respondents according to Sources of Credit

Table 7 shows that majority of the respondents (43.2% and 42.6) male and female respectively showed that money gotten from personal savings was used to finance the business. 16.0% of the male and 29.7% of the female reported that they requested for loans from relatives and friends. While 3.7% and 5.9% male and female respectively received capital from informal sources (Money Lenders) This might as a result of the bureaucracy in obtaining loan from the financial institutions or it could be as a result of high rate of interest which discouraged farmers. While a huge percent (male 37.0 and female 23.5) received loans from cooperatives.

Capital is very important because of its ability to engage or motivate other factors of production. It acts as a catalyst or elixir that activates the engine of growth, enables it to mobilize its inherent potentials and to advance in the planned or expected direction (Ijere, 1985). If farmers possess credit, he could overcome his destruction by applying credit to purchase needed equipment goods and services to attain a more efficient use. From the table, the lending sources of credit is personal savings because of these institutional source cannot be easily access by the farmers. Also, it shown from the table that as the sources of capital of the fishery farmers increases, their efficiency level also increases.

Table 8: Distribution of Respondent by Farm Size

Farm Size (ha)	Male		Female	
	Frequency	Percent	Frequency	Percent
0-0.5	16	19.8	12	17.6
0.6-1.0	30	37.1	34	50.0
1.1-1.5	20	24.7	10	14.7
1.6-2.0	5	6.2	11	16.2
>2.1	10	12.3	1	1.5
Total	81	100	68	100

Sources: Field Survey, 2013

### Farm Size

Farm size is a factor that affects the level of output. Nigeria agriculture is characterized by small farm holdings. Babatunde et al, (2004). Therefore small size invariably leads to small output. The table shows that majority of the farmers are involved in the cultivation of small and medium size farmland.

Table 9: Distribution of respondent by Pond Type

Pond Type	Male		Female	
	Frequency	Percent	Frequency	Percent
Concrete	65	80.2	51	75.0
Earthen	10	12.3	14	20.6
Other	6	7.4	3	4.4
Total	81	100.0	68	100.0

Sources: Field Survey, 2013

### Pond type

Table 9 shows that 80.2% of the male and 75.0% of the female respondents used concrete ponds for their business. This revealed that the concrete type of pond is the most popular system used in the study area compared to the earthen pond which was used by 12.3% of the male respondents and 20.6% of the female respondents 7.4%

male and 4.4% female of the remaining respondents used other types of pond like tanks and plank ponds.

The use of concrete pond might be due to its convenience, easy to clean and manage, and ease of harvesting and draining (Kareem et.al, 2012).

Table 10: Distribution of Respondents by Fish Specie Cultivated

Species	Male		Female	
	Frequency	Percent	Frequency	Percent
Clarias	76	93.8	65	95.6
Tilapia	5	6.2	3	4.4
Total	81	100	68	100.0

Sources: Field Survey, 2013

Table 10 shows that majority (93.8% male and 95.6 female) of farmers cultivated clarias specie commonly known as cat-fish, while only 6.2% male and 4.4% female cultivated other type of specie. This finding is in line with Aromolaran (2000) and Kareem (2008). The reason might be due to the species commands a large market, hence, most preferred and more income to fish farmers. It is tasty in whatever form prepared and has high nutritional values.

### Budgetary Analysis:

Table 11: Budgetary Analysis

Male		Female	
Variable	Amount (N)	Variable	Amount (N)
Total Variable Cost (TVC)	25619100	Total Variable Cost (TVC)	34503900
Total Fixed Cost (TFC)	5444975	Total Fixed Cost (TFC)	3584000
Total Cost (TC)	31064075	Total Cost (TC)	38087900
Total Revenue (TR)	80759900	Total Revenue (TR)	66943640
Gross Margin (TR-TVC)	55140800	Gross Margin (TR-TVC)	32439740
Net Farm Income (TR-TC)	49695825	Net Farm Income (TR-TC)	28855740

Sources: Field Survey, 2013

The budgetary table showed the cost and return analysis where the total fixed cost and total variable cost represents 17.5 percent and 82.5 percent of the total cost of production respectively for the male fish farmers, while that of their female counterpart were 90.6 percent and 9.4 percent respectively. This is contrary to Raufu, et, al. 2009, where the fixed cost was having a higher percent than the total variable cost. The higher value for variable cost may be due to the high cost of feed. The gross margin of N55,140,800 for the male and the N32,439,740 for the female fish farmers and a net farm income of N49, 695, 825 for male fish farmers and N28,855,740, which indicate fish farming is profitable to male farmers than their female counterpart in the study area.

### Results of Profitability Ratio Analysis

Table 12: Results of Profitability Ratio Analysis

Item	Male	Female
Expense Structure Ratio (ESR)	0.2125	0.1039
Rate of Return on Capital Invested (RORCI)	1.5998	0.7576
Gross Ratio	0.6251	1.3199

Sources: Field Survey, 2013

The analysis of ratios in Table 12 shows that the expense structure ratio 0.10 for male and 0.21 for female shows that 10 percent and 21 percent of the total cost of the fish farming enterprise was made up of fixed cost items for male and female respectively.

The rate of returns 0.76 and 1.59 for male and female fish farmers respectively. This implies that for every one naira invested, 76 kobo and N1.59 for both male and female respectively was gained.

The gross revenue ratio of 1.32 and 0.63 for male and female fish farmers respectively indicates that for every N1.00 returns to fish farming enterprise, N1.32 and 63 kobo is being spent.

The gross margin ratio of 0.64 and 0.48 for male and female respectively which further confirm that the business is profitable to male fish farmers than their female counterpart.

*Result of the regression analysis*
**Table 13: Regression result of the factors influencing the profit level of fish farmers by gender**

Variables	Male			Female		
	Coefficient	Std. Error	t-value	Coefficient	Std. Error	t-value
Constant	3.2806	0.5914	5.55	3.2225	0.9970	3.23
Cost of fingerlings	0.3547	0.1255	2.83	0.1865	0.1387	1.34
Cost of feed	0.2110	0.1094	1.93	0.2234	0.0856	2.61
Cost of fixed Input	-0.0274	0.0611	-0.45	0.1032	0.0932	1.11
Pond size	0.0107	0.0834	0.13	0.0532	0.1349	0.39

Source: Field Survey, 2013.

\*Significant at (P<0.01), \*\* Significant at (P<0.05), \*\*\* Significant at (P<0.10).

F-Stat = 8.21

F-Stat = 2.41

R- Square = 0.3018

R – Square = 0.1329

**Adj. R- Square = 0.2651**

**Adj. R- Square = 0.0779**

**Root MSE = 0.25688**

**Root MSE = 0.28145**

The regression analysis was carried out to examine the determinants of factors influencing the profit level of fish farmers by gender in the study area. The multiple regression result revealed that the profit level of fish farmers is significantly determined by pond size, cost of feeds, and cost of fingerlings. The coefficients are in line with the *a priori* expectation. Hence, the more the amount expended on fingerlings and feeds, the more the amount that will be realized from fish farms in the study area. The result is consistent with the finding of Yusuf et al. (2002). The result equally suggests the need for fish farmers to purchase more of these inputs to increase their revenue from fish production. Similarly, policies that will ensure availability of these inputs to fish farmers at affordable price should be put in place. The positive relationship between value of fish and pond size indicates that with increase in the size of fish pond, more fish will be produced. This is not surprising because all things being equal the quantity of fish produced is directly proportional to the pond size.

The coefficient of determination, R<sup>2</sup> values of 0.3018 and 0.1329 for male and female respectively indicates that 30.18% and 13.29% (male and female respectively) of the variation in the profit level is explained by pond size, cost of feed, and cost of fingerlings. Also, 69.82% and 86.71% (male and female respectively) of the variation in the Profit level is determined by other factors not considered. Table 13 shows that the regression coefficient, standard error, F ratio and the level at which the t ratio was significant. The performance of the analysis of variance in table 15 shows that F ratio of 8.21 and 2.41 (male and female respectively) was significant at 0.01 alpha level. This provided the evidence that a combination of pond size, cost of feeds, and cost of fingerlings had joint impact on the profit level of fish farmers by gender in the study area. This is line with Adewuyi et. al, 2010 which says that a combination of pond size, cost of labour, cost of feeds, lime, fertilizer, fixed inputs and cost of fingerlings had joint impact on the fish output in the study area.

The beta weight ranged from 0.0107 to 0.3547 for male and 0.0532 to 0.2234 for female. The result shows that out of all (4) independent variables considered, fingerling is the most important input for the male farmers, while for the female fish farmers, feed is the most important input.

#### IV. SUMMARY, RECOMMENDATION AND CONCLUSION

##### *Summary of Major Findings*

This study focused on the gender analysis of culture fish enterprises in Epe Local Government Area of Lagos State, Nigeria. Based on the findings of the research, the male fish farmers dominated the area more than the female fish farmer which implies that more awareness should be made so as to enable more female fish farmers to be involved in the enterprise.

The findings showed that both gender are technically efficient though not at 100% level.

The expense structure ratio 0.10 for male and 0.21 for female shows that 10 percent and 21 percent of the total cost of the fish farming enterprise was made up of fixed cost items for male and female respectively.

Based on the findings, the rate of returns 0.76 and 1.59 was also noted for male and female fish farmers respectively. This implies that for every one naira invested, 76 kobo and N1.59 for both male and female respectively were gained. The gross revenue ratio of 1.32 and 0.63 for male and female fish farmers respectively indicates that for every N1.00 returned to fish farming enterprise, N1.32 and 63 kobo is being spent.

The gross margin ratio of 0.64 and 0.48 for male and female respectively further confirm that the business is profitable to male fish farmers than their female counterpart.

The regression analysis provided the evidence that a combination of pond size, cost of feeds, and cost of fingerlings had joint impact on the profit level of fish farmers by gender in the study area.

This study also shows that fish farmers are facing several problems in their production activities. These problems or constraints negatively affect the efficient production of fish in the study area. This suggests that a considerable fish yield potential needs to be exploited through better use of available production resources in the study area. The constraints associated with fish production as highlighted in this research work if tackled, could pave way to increase production, technical efficiency and farm income of stakeholders. Hence, for efficient production of

fish in the study area, these constraints must be reduced to the minimum. This can be done through good policy formulation, implementation, proper supervision of fish production programme, effective extension services and proper agricultural financing. In order to stimulate local fish production, government should make a policy that will motivate fish farmers to optimally allocate productive resources to achieve optimum production.

### Conclusion

From the study, fish culture enterprises have a lot of benefit to both genders. The increasing preference for fish and its products by people makes the enterprises profitable venture mostly for the female farmers. Thus, as production becomes more efficient when an equally efficient marketing system to absorb farm output which affords farmers a fair share of the market price should be encouraged as this stimulates employment of idle resources and increase the standard of living of the farmer.

### Recommendations

Based on the outcome of this study, the following recommendations were needed: -

- 1) Extension agent should play active role in disseminates useful information's practices that will increase farmer's efficiency of fish production.
- 2) Adequate farm inputs like feed, fingerings should be made available and affordable to farmers in the study area on time.
- 3) Young people should be encouraged to practice fish farming, and also involve in carrying out research on fish farming as this may help in solving the problem of food security and food sufficiency.

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