Determinants of Income Generation Among Fish Marketers in Anambra State, Nigeria

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Abstract

The study assessed determinants of income generation among fish marketers in Anambra State, Nigeria. A structured questionnaire was used to collect data from a sample size of 120 respondents and were analyzed using mean score, frequency, percentage, regression model and enterprise budgeting. The finding indicated that 45.8% of the respondents fell between the age of 41 and 50 years, 60% were females while 37.5 of the respondents were married. The mean household size of the respondents was 7 persons while 47.5% of them had household size of between 1 and 5 persons. Majority (50%) of the respondents had secondary school education while the majority (41.2%) of the marketers had 31-40 years of marketing experience. More so, majority (54.2%) of the marketers financed their business with their isusu contribution. On the costs benefit analysis, the total revenue realized by the marketers was N6, 980, 200 while net return on investment was 2.4. The result of regression analysis indicates that out of 10 variables investigated, only four (4) variables were found to be statistically significant with respect to the factors influencing income generation among fish marketers in Anambra state. Those variables were; age (p<0.000), educational level ((p<0.002), marketing experience (p <0.009) and sex (p<0.005).The marketers identified inadequate credit loan (x=3.98), high cost of fish (x=3.72),poor marketing outlet (x=3.53),price fluctuation (x=3.43),transportation cost(x=2.83),limited access to resource(x=2.53),bad road network(x=2.32) and poor processing method (x=2.11) as the major constraints. In view of the findings, it was recommended that the government should grant agricultural incentives like short and long-term loans to the marketers in the study area.

Keywords: Fish, marketing, income, prices, users.

Introduction

Aquaculture is an industry that is recently attracting investors as a result of its lucrative nature, high demands for fish and the low supply in the country. To engage into it as a business, it requires having the right knowledge and proper management skills. With these, high-profit margins are achievable and ensured in this business (Sambo,Abdulaziz and Bada 2021). Fish farming system is the system in which fishes are reared for sale or for consumption. Fish farming can be combined with crop, animal husbandry and irrigation practices which can lead to a better utilization of local resources. Fish farming is a branch of aquaculture that involves the domestication and rearing of various species of fish. This practice allows for the feeding, breeding, growing, and harvesting of fish in a well-planned and controlled environment (Sambo *et al.*, 2021). However, to adopt fish farming as a new innovation, such household would have to relocate their time, labour and other resources to integrate fish farming with their traditional activities (Olaoye and Oloruntoba,2010).

According to Agyakwah et al., (2020), there is a wide range of fish farming options including raising fish in earthen ponds, concrete ponds, plastic tanks, and other water holding facilities. However, the popular and simple techniques are fish production in an earthen and concrete pond, which is the basic units of fish farming, practices worldwide (Ekine, Ewubare and Ogu,2019). The major species cultured in Nigeria include tilapia, catfish, and carp. However, the African catfish species (Clarias gariepinus) is the most widely accepted and highly valued fish with a higher survival rate (Nyong, 2021). Fish farming has great potential to increase the nutritional needs of the Nigerian populace. FAO, (2012) in Ikechukwu, Nwankwo, Edeh, Eboh, and Ezenwosu2023), reported that fish contribute more than 60% of the world's protein supply, especially in developing countries. Fish farming and marketing also have the prospect of creating

employment, generating income for the urban population, improving the socio-economic status of the farmer as well as generating foreign exchange (Oluwasola and Ige, 2015).

Fish farming is known to have significantly boosted Nigeria's economic development over the past 20 years (Olanrewaju, Dadi,Tumi and Theódór., 2022). Fish farming currently contributes 3.5% to Nigeria's gross national product (GNP) and accounts for 0.2% of the total world fish supply (Umaru *et al.*, 2021). Nigeria's annual demand for fish presently is about 1.4 million tonnes, while domestic production is about 780,000 tonnes. This shows that there is a large gap between supply and demand and this has led Nigeria to import fish annually (Nwiro, 2012 in Ikechukwu,Nwankwo, Edeh, Eboh, and Ezenwosu(2023). To close the deficiency, Nigeria needs at least one million tons of fish to feed its population annually (Sambo *et al.,* 2021). According to Nyong (2021), there is a need to increase production and reduce fish imports into the country to enable economic growth in Nigeria. Therefore, more efforts in fish farming are needed to bridge the gap between fish supply and demand in Nigeria.

Fish and its products get to the consumers through the process of marketing (Okeke and Nwoye,2019). Therefore, marketing is the process of exchanging goods and services from one-person to another with reference to price or all the processes involved from the production of a commodity until it gets to the final consumer. Fish marketing essentially consists of all the activities involved in delivering fish from the producer to the consumer, while distribution provides channels that link the producers to the market (Okeke and Nwoye,2019). Some processes involved in marketing of fish include, sorting, dressing, packaging, storage, grading and freezing. According to Olubunmi and Bankole (2012) in Okeke and Nwoye (2019), as the fish, like any other production moves closer and closer to the ultimate consumer, the selling price increases since the margins of the various intermediaries and functionaries are added to it. These market intermediaries are the whole sellers and retailers and both play important role in the marketing system (Okeke and Nwoye,2019).

Despite the potentials of fish farming and marketing to improve livelihoods in rural communities of Nigeria, it has not been fully explored as a poverty reduction strategy in Nigeria and this could be attributed as a result of inadequate quality fish seed for stocking, poor extension services, lack of fish farmers' cooperative societies, poor infrastructural facilities, poor funding by the government, and high cost of fish feed (Ikeogu,Ogbonnaya, Okpala-Ezennia and Obuakor,2020). These problems reduce the income potential of farmers and marketers, which in turn affects their livelihoods.

In view of the above, the Nigerian government has initiated several developmental projects with a greater emphasis on fish farming to address the problem of low fish production and also to provide a conducive atmosphere for fish farming and marketing in Nigeria (Nyong, 2021).In order to understand the potentials of fish farms in Nigeria, it is necessary to know the cost and return generated by the fish marketing which will guide financial planners on net farm income analysis to increase fish production and fish marketing performance towards profitability (Asuquo,Ejabu, Bogbo, Atu and Adejoupe,2018). In the light of this, this study aims to investigate the determinants of income generation among fish marketers in Anambra State, Nigeria. The specific objectives were to assess the income generated by the fish marketers in the State, estimate marketing performance of the fish marketers, identify the factors influencing the income of the fish marketers and assess the constraints working against fish marketing in the State.

Materials and methods

The study area for this research is Anambra State. The State is located in the South East of Nigeria. It is bounded by Delta State to the West, Imo State to the South, Enugu State to the East and Kogi State to the North. The State lies on the longitude 60 35E and 7E and latitude of 50 38N and 60 47E. The target population for this study was fish marketers in the State. Multistage sampling techniques were used for this study. Four local governments out of 21 local governments in Anambra State were selected due to their popularity in fish farming. Ayamelum, Anambra East, Anambra west and Ogbaru local government were selected. In the second stage, two communities each from a local government were selected. Here Omor and Umuelum in Ayamelum Local Government, Igbariam and Umuoba Anam in Anambra East,Nzam and Iyi ora Anam in Anambra west , Atani and Osamala in Ogbaru Local Government were purposely selected. These gave a total of eight (8) communities. Third stage, 15 fish marketer were selected from each community using simple random techniques and this gave a total sample size of 120 respondents. Data were collected through a structured interview schedule. Data collected for the research were analyzed using mean score, frequency, percentage, regression model and enterprise budgeting.

Model specifications:

(1) Profits generated by the fish marketers was obtained using **gross margin Analysis**

It is the difference between the total revenue and the total variable cost.

(a) Gross margin analysis was calculated as GM =TR-TVC

Where GM = gross margin (N)

TR= total revenue (N) = Price (P) x Quantity of fish (Q)

TVC = total variable cost (N)

(b) RCI = GM/TVC

Where RCI = return on capital invested

(2) To estimate marketing performance of the fish marketers was estimated using marketing margin (MM);

MM=SP-PP x 100

SP   1

Where: MM=Marketing margin (N)

SP=Selling price   (N)

PP=Purchasing price   (N)

Marketing efficiency ratio was estimated using a simplified marketing formula as specified by Olukosi and Isitor(1990)in

Okpara and Obike,(2016)

M.E =   Net return   x 100

     Total Marketing Cost (TMC)   1

Where

M.E=Marketing Efficiency

Net Income (NI)=TRS- TMC

Where

TRS=Total Revenue from Sales

TMC=Total Marketing Cost

(3) The model for the factors influencing income generation among fish marketers is expressed as follows:

$Y=(X_1, X_2, X_3, X_4, X_5, X_6, X_7, \text{----------} X_{10)+e}$

Where

Y=Income earned by the marketers

X1 = age in years.

X2 = purchase price (N)

X3 = education level

X4 = marital status, (single = 0,

Married=1and widow/divorce)

X5 = household size (measured by the

Number of people living under one roof)

X6 = Marketing experience

X7 = access to credit

X8 = marketing charges

X9 = transportation cost (N)

X10 = Gender (male =0, female =1)

Results and Discussion

The Socioeconomic characteristics of fish marketers used in this study included sex, age, marital status, educational level, marketing experience, household size, access to credit, social organization and source of capital. Results of the socio-economic analysis of this study presented in Table 1 showed that 60% of the respondents were female while 40% of them were male. This implies that female dominated fish marketing business in the study area. This could be so because women engage more in fish processing, preservation, and marketing in the study area (Ikeogu, *et al*., 2020). According to *Yisa et al*., (2015), males engaged themselves predominanantly in fish production than their female counterparts. Greater proportions (37.5%) of the respondents were married while 25% of them were single.

The majorities (50%) of the respondents have secondary school education while the rest had formal education. This study agrees with the work of (Umaru *et al.,* 2021) who reported that a higher level of education is necessary for improved farm management and the use of new production technologies. Also, 45.8% of the respondents were mostly between the ages of 41-50 years and had an average mean age of 44years. This shows that the respondents were in the middle and active age group, implying that training them in fish marketing business may be effective. The average years of marketing experience of the fish marketers was 25 years while the average household size was 7 persons. This finding is in line with the study of Olanrewaju, *et al.* (2022) who stated that the profitability of fish business is also influenced by farmers' years of experience. Age, level of education, as well as years of experience in the fish farming business, are among the factors that determine the managerial ability of the fish farmers (Ikechukwu *et al*,2022).

Findings from the study also indicate that most of the fish marketers (54.2%) obtained their capital from isusu. This could be as a result of the large interest rate on loans offered by banks, which therefore makes it not feasible for starting the business. The finding is not in consonance with that of Yisa *et al.* (2015) and Ikechukwu (2022), who found out that the majority of fish farmers in their studies, derived their source of capital from personal savings.

Table 1: Socio-economic characteristics of fish marketers in Anambra state

Variables	Frequency	Percentage	
Age			
21-30	**23**	**19.2**	
31-40	**12**	**10.0**	**44years**
41-50	**55**	**45.8**	
51-60	20	16.7	
61-70	10	8.3	
Sex			
female	72	60.0	
male	48	40.0	
Marital Status			
married	45	37.5	
single	30	25.0	
Divorced/separated	25	20.8	
widowed	20	16.7	
Household size			
1-5	57	47.5	
6-10	39	32.5	7persons
11-15	24	20.0	
Education Level			
Primary school	32	26.7	
Secondary school	15	50.0	
N.C.E./OND and HND	60	12.5	
Degrees	13	10.8	
Social organization			
Yes	90	75.0	
No	30	25.0	
Access to credit			
Yes	85	70.8	
No	35	29.2	
Source of capital			
Personal savings	35	29.2	
Isusu contribution	65	54.2	
Bank loan	11	9.2	
Friends/relatives	9	7.5	
Marketing Experience			
1-10	30	25.0	
11-20	11	9.2	
21-30	25	20.8	25years
31-40	50	41.7	
41-50	2	1.7	
51-60	2	1.7	

Source: field survey 2024

Cost benefit analysis of marketing performance of the fish marketers in the study area

Data on Cost benefit analysis of marketing performance of the fish marketers in the study area were generated and expressed as follows; Variable costs (VC) included in the analysis were expenditures on purchase, transportation, loading/offloading, union dues, security levy and other miscellaneous costs. On the other hand, fixed costs that were used included; bags, wheel barrow, plastic chairs, wooden tables, interest on loan, and rent on the store annually. This study recorded a total variable cost of N1,107,000 and a total fixed cost ofN931,200, which are all presented in Tables 2 below. However, the gross margin for the research was N4,942,000 with a net return income of N4,010,800 implying that for every N1 invested in the fish marketing business, there was a N2.4 income. The study indicated positive net return and a high rate of income indicating that fish marketing is profitable in the study area. This result agrees with that of Umaru et al., (2021) and Ikechukwu et al (2023) which reported a return on capital investment as a positive income. This indicating that fish business is profitable in Enugu and Anambra State respectively. According available literature, several studies have shown that fish farming is a profitable business and this could be attributed to return on capital investments associated with fish farming due to high multiple procreations (Ekine et al.,2019; Ebukiba and Anthony,2019; Sambo et al., 2021).

Table 2: Cost benefit analysis of marketing performance of the fish marketers in the study area

Variables	Amount(N)	Percentage (%)
Total revenue	**N6,980,200**	
Purchases	N588,300	53.1
Transportation	N243,300	22.0
Loading/offloading	N194,500	17.6
Union dues	53,000	4.8
Security levy	28,000	2.5
Total variable cost (TVC)	**1,107,000**	
Fixed cost (FC)		
Bags	18,200	2.0
Wheelbarrow	48,000	5.2
Plastic table	85,000	9.2
Wooden table	180,000	19.3
Interest on loan	350,000	37.6
Rent for the store annually	250,000	26.8
Total fixed cost (TFC)	**931,200**	
Total cost= TVC+TFC	2,038,200	
Gross Margin = TR-TC	N4,942,000	
Net return =GM-TFC	N4,010,800	
Marketing margin (%)		27.0
Marketing efficiency (%)		52.3
Return on investment (GM/TVC)	**N2.4**	

Source: Field survey, 2024.

Factors influencing income generation among fish marketers

The result of regression analysis in Table 3 indicates that out of 10 variables investigated, only four (4) variables were found to be statistically significant with respect to the factors influencing income generation among fish marketers in Anambra State. They were; age ($p<0.000$), educational level (($p<0.002$), marketing experience (p <0.009) and sex ($p<0.005$). These variables were able to explain 68% variation of the factors influencing income generation among fish marketers. Adjusted R2 also supported the claim with a value 0.665 or 67%. This implies that the independent variables explain the behaviour of the dependent variable at 67% level of confidence.

Table3: Regression estimate of income generation among fish marketers

| Variable | Unstandardized coefficient | | Standardized coefficients | | |
	B	Standard error	Beta	T	Significance
constant	1.567	0.772	-	3.658	0.004
Age	0.006	0.014	0.024	0.380	0.000
Purchasing price	0.054	0.036	0.138	0.573	0.107
Education level	0.207	0.085	0.175	2.569	0.002
Marital status.	0.370	0.254	0.114	1.352	0.587
Household size	0.054	0.035	0.137	0.563	0.107

Marketing experience	1.536	0.407		0.463	3.809	0.009
Access to credit	0.372	0.254		0.115	1.352	0.678
Marketing charges	1.275	0.155		0.724	8.827	0.001
Transportation cost	1.766	0.435		0.375	4.050	0.578
sex	0.817	0.0341		0.223	2.341	0.005

Source: Field Survey 2024; R = 0.772, R^2 = 0.679, Adjusted R^2 = 0.665

Constraints to fish marketing in the Study Area

Result in table 4 shows inadequate credit loan(X=3.98), high cost of fish(X=3.72), poor marketing outlet(X=3.53), price fluctuation(X=3.43), cost of transportation(X=2.83), limited access to resources(X=2.53), poor road network(X=2.32) and poor processing method used by fish farmers(X=2.11) were the major constraints identified by the marketers. This finding is in agreement with Okeke and Nwoye (2019) who identified some of these variables as the constraints working against fish marketing in their study.

Table 4. Constraints militating against fish marketing in the study area (n = 120)

Constraints	Mean scores(X)	Rank
Inadequate credit loan	3.98	1st
High cost of fish in the market	3.72	2nd
Poor marketing outlet	3.53	3rd
Price fluctuation	3.43	4th
Cost of transportations	2.83	5th
Limited access to resources	2.53	6th
Poor road network	2.32	7th
Poor processing method	2.11	8th

Source: field survey, 2024. Cutoff point =2 and above.

Conclusion and Recommendation

Fish marketing in Anambra State, Nigeria was profitable since there is a positive value of net return on investment of 2.4 from the enterprise budgeting analysis. This implies a return of N2.4 kobo for every 100 kobo invested into the fish marketing business. Therefore, if proper measures should be taken in handling the identified constraints, working against fish marketing in the area, the marketers are likely to make more profit. Sequel to the findings of the study, it was recommended that the government should grant agricultural incentives like short and long-term loans to the marketers in order to solve the constraints working against inadequate credit loan. Efforts should be intensified to make fish marketing more viable and lucrative in the study area through the provision of organized markets, more access to resources for the marketers and also rehabilitation of the existing roads by the government.

References

1. Agyakwah, S.K., Asmah, R., Emmanuel T.D.M., Ragasa, C., Amewu, S., Tran, N., Oyih, M. & Ziddah, P (2020). Farmers' Manual on Small-Scale Tilapia Pond Farming in Ghana. *Council for Scientific and Industrial Research-Water Research Institute, Accra, Ghana*. 37 pp.
2. Asuquo, A. I., Ejabu, F. E., Bogbo, R. J., Atu, O. A., & Adejoupe, A. O. (2018). Accounting behaviour of small-scale enterprises in Nigeria:Focus on business sustainability and growth. *Journal of Business and Economic Development*. 3(2), 43-50.
3. Ebukiba, S. E., & Anthony, L. (2019). Economic Analysis Of Cat Fish (Clariasgariepenus) Production in Karu Local Government Area, Nassarawa State, Nigeria. *IOSR Journal of Agriculture and Veterinary Science*, 12(3): 41-48.
4. Ekine, D.I., Ewubare, D.B., & Ogu, P.I (2019). Profitability Analysis of Concrete and Earthen Ponds Catfish Production Systems in Rivers State, Nigeria. *Int. J. Economics and Financial Management*, 4(1): 58-65.
5. Ikechukwu, C.C., Nwankwo, C.G., Edeh, I. C., Eboh, U. C, & Ezenwosu, C. M. (2023). Profitability of Fish Farming in Awka, Anambra StatNigeria. Proceedings of the First Faculty of Agriculture International Conference, Nnamdi Azikiwe University, Awka, Nigeria.
6. Ikeogu, C. F., Ogbonnaya H. F., Okpala-Ezennia, K. P. & Obuakor, G. T. (2020). Challenges of women involved in fishing activities (a case study of Otuocha, Anambra State, Nigeria): A SWOT analysis.*Global Journal of Fisheries Science*. 2(1), 8-13.
7. Nyong, C. E (2021). Effect of Cost Accumulation Methods on the Profitability of Farmingssss Business in Calabar metropolis, Nigeria. E*uropean Journal of Management and Marketing Studies*. 6(3): 44-55.
8. Okeke, M.N. & Nwoye, I.I. (2019). Analysis of Fresh Catfish Marketing among Natural Fishpond Users in Ogbaru Local Government Area of Anambra State, Nigeria. *Asian Journal of Agricultural Extension, Economics &Sociology,*36(3): 1-7.

9. Okpara,B.O & Obike,K.C.(2016).Determinants of Income among Female Fish Marketers in Ebonyi State,Nigeria. *The Nigerian Agricultural Journal*,47(2),225-231.
10. Olanrewaju, F.O., Dadi, K., Tumi, T., & Theódór, K. (2022). Profitability assessment of catfish farming in the Federal Capital Territory of Nigeria, *Aquaculture journal*. Volume 555, 2022, 738192. ISSN 0044-8486, https://doi.org/10.1016/j.aquaculture.
11. Olaoye,O.J. & Oloruntoba,A.(2010). Determinant of aquaculture technologies adoption among fish-farmers in Obafemi – owode local government area of Ogun State, Nigeria. *Journal of Humanities, Social Sciences and Creative Arts,* 5(1):37-48.
12. Oluwasola, O. & Ige A.O. (2015). Factors determining the profitability of production in Ibadan Oyo State, Nigeria. *Journal of Sustainable Agriculture Research*, 4(4), 57-65.
13. Sambo, A.S., Abdulaziz, K & Bada, M.M. (2021). Profitability analysis of small-scale fish farming in Zangon-Kataf Local Government Area of Kaduna State, Nigeria. *International Journal of Agricultural Policy and Research;*9 (3): 90-97.
14. Umaru, I.L., Okoh, T.C, & Ishiwu, R.C., (2021). Profitability of catfish production on Enugu Metropolis, Enugu state, Nigeria. *Open Journal of Agricultural Science*,2(2):1-11.
15. Yisa, E.S., Adebayo, C.O., Mohammed, U.S., & Anaweta, P.U. (2015). Profitability analysis of catfish farming in Sukeja Local Government Area of Niger State, Nigeria. *Journal of the Faculty of Agriculture and Food Sciences.* Volume 13 Number 1, April 2015 pp.

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