

Information Needs of Fish-Feed Entrepreneurs in Kainji Lake Basin Nigeria
<https://dx.doi.org/10.4314/jae.v21i3.5>

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Abstract

The study examined information needs of fish-feed entrepreneurs in the Kainji Lake Basin, Nigeria. Multistage sampling technique was used to select twenty-nine respondents for the study. Semi-structured interview schedule was employed for data collection. Data were

analysed using percentages, mean, standard deviation and cost analyses function. The study revealed that 41.4%

of the respondents were within the age bracket 40-44 years with mean age of 41 years. The majority (93.1%) of the respondents were married with 48.2% of the respondents having educational qualification beyond secondary level. The challenges of operating fish-feed enterprise in the area were high cost of fish meal ($\bar{x} = 3.76$, $SD = 0.51$), lack of access to credit ($\bar{x} = 3.48$, $SD = 0.74$) and lofty cost of operating milling machine ($\bar{x} = 2.93$, $SD = 3.70$). The profitability analysis for investing in fish-feed enterprise revealed that the gross margin per unit fish-feed was ₦49.85. The respondents require information from extension on access to credit facility and training on cost effective fish-feed formulation. Linkage with credit sources and training skill on fish-feed formulation should be incorporated into fisheries training to ensure effective extension delivery system.

Keywords: Extension needs, fish-feed information need, Kainji lake basin.

Introduction

Globally, the fishery industry is significant in improving the economy as livelihoods of millions of people all over the world are dependent on it, especially, fish farming, playing a critical role of gainful employment, food and nutrition security for households (Greenfacts, 2004). Regrettably, Nigeria is not producing enough fish for consumption and also, the fishery industry is not providing the necessary financial empowerment needed by the fish farmers for one reason or the other (Foraminifera Market Research, 2016).

Meanwhile, Nigeria has a high potential to develop fish farming to meet its increasing demand in fish food supply and reduce substantial fraction of her huge fish deficit of 400,000 metric tons (Food and Agricultural Organisation of United Nations, 2006). Aquaculture development largely depends on the availability of high quality, affordable and sufficient quantity of fish-feed and fingerlings supply to end users all year round. Fish seed production in Nigeria has increased from 3 million in 2000 to about 30 million in 2005, and 55 million in 2007 (Federal Department of Fisheries, 2008). In spite of the increase, fish farmers are still confronted with challenge of insufficient supply and increased unit cost for production in fish seed and fish-feed enterprises. Both lead to high cost of input and eventual higher cost of fish as source of protein in the market.

The task of meeting the increasing demand for fish-feed can be best realized through availability of local fish-feed production. Indigenous fish-feed enterprises are seen as an open approach because of ease of availability of local resources and access by farmers. In other to achieve this, an array of strategies has been adopted such as price policies, input subsidies, production credit and liberalization by governments and individuals (Foraminifera Market Research, 2016) to boost the output of these fish-feed enterprise, and hitherto their performance is low in terms of meeting the needs of the fish enterprise. It has become utterly crucial to budge extension focus from production-driven to market led extension which result in

increased output and income. Market driven extension help entrepreneurs reduce production cost; improve quality, value and marketability of products leading to increase profitability of the entrepreneur.

Marketing extension are measures which extension personnel take to assist their clientele in marketing (FAO, 2002). Consequently, for extension personnel to actually help in this regard, it is essential to appraise fish-feed entrepreneur's perspective in the areas in which such help

is needed for fish-feed marketing. This is because programmes and services can be effective only when they meet the felt needs and are confirmed by the target group that it has those needs (Oakley and Garforth, 1997) to enable continued adoption of fish-feed technologies for increased fish production. It is against this background that this study was carried out on information needs of fish-feed entrepreneurs in Kainji Lake Basin, Nigeria. The specific objectives were to;

- i. examine the socio-economic characteristics of the respondents,
- ii. identify information needs of the respondents,
- iii. determine the profitability of fish-feed production, and
- iv. identify challenges in fish-feed enterprise.

Methodology

The study was carried out in communities in the Kainji Lake Basin, Nigeria. Kainji Lake is situated between Latitude 9° 50' and 1° 55' North and Longitude 4 ° 23' and 4 ° 51' East and was formed in 1968 as an impoundment of River Niger (Olorok, 2011). The lake is the first and the largest man-made lake in Nigeria. It is bounded by Niger State on the south and Kebbi State on the north.

Multi-stage sampling technique was used for the study. The first stage was the stratification of communities within the lake basin into Local Government Areas (LGAs). Niger state has 2 LGAs (Borgu and Magama) and Kebbi state has 2 LGA (Ngaski and Yauriu) making a total of 4 LGAs. The second stage was the identification of LGA in the states with active and functional fish-feed entrepreneurs. Selection of identified communities formed the third stage. Thus; Borgu LGA included New Bussa and Monai communities. The fourth step was selection of all fish-feed entrepreneurs in each of the selected communities in the LGA. Thus, 25 fish-feed entrepreneurs were studied from New Bussa and 4 from Monai, making a total of 29 fish-feed entrepreneurs studied.

Data collected were analysed using descriptive statistics involving the use of tables, percentages, frequency and mean. Cost and returns analysis was also carried out to investigate the profitability of the fish-feed enterprise

Results and Discussion

Socio-Economic Characteristics of the Respondents

Data in Table 1 shows that the majority (89.7%) of the fish-feed entrepreneurs were male while 10.3% of them were female. This implies that men predominate in fish-feed entrepreneurs than the female entrepreneurs. Nonetheless, women plays a significant roles in fisheries value chain, particularly in processing and marketing as reported by Nwabeze (2011). Most (93.1%) of the respondents were married and 6.9 percent were single. The result implies preponderate of married entrepreneurs in fish-feed production. This could be attributed to the fact that additional responsibility rest more on married people to meet their households need.

About 41.4% of the fish-feed entrepreneurs were within the age range of 40-44 years old with mean age 42 years. Thus, the respondents were in their middle age and should be able to take risk with respect to investing in fish-feed business Akinbile and Alabi (2010). This finding collaborate Ifejika, P.I., Oladosu, O.I., Okunade, E.O., Olowosegun, T. and Nwabeze, G.O. (2010)) study report that youth invest more in fishery in Abia state. Also, 41.5.0% of the respondents completed secondary education and 31.0% university education. Those that completed polytechnic and NCE accounted for 13.8% and 3.4% respectively. It could be inferred that most of the respondents are literate and are likely to have positive attitude towards adopting innovation on fish-feed. This findings agree with Ayanda (2011) assertion that majority of those involved in fish business in Kwara State are educated.

The majority (75.9%) of the respondents established fish enterprise primarily for sale of fish-feed and to feed their fish with 79.3% practicing fish farming as their main occupation. The finding implies that stakeholders in fisheries engage in more than one fisheries value chain. This confirms Nwabeze (2016) findings in Jebba Lake Basin that fisherfolk engage in multiple fisheries livelihoods.

Respondents experience in fish-feed enterprise shown in Table 1 indicates that many (44.9%) of them had 6-10 years while 31.0% and 24.1% of them had experience in fish-feed enterprise for 11-15 years and 1-5 years respectively. their mean age in fish-feed enterprise was about 8.0 years. The implication of the findings is that the fish-feed entrepreneurs had acquired some level of experiences in fish-feed production which could serve as an advantage for their increased participation for extension activities. The majority (89.7%) of the respondents financed their fish-feed enterprise through personal savings. This means that personal savings constitute the main source of fund for sustaining fisheries enterprise.

Table 1: Socio-economic characteristics of the respondents

Variable	Categories	Percentage * (n=29)	Mean
Sex	Male	89.7	
	Female	10.3	
Marital status	Married	93.1	
	Single	6.9	
Age	< 29	6.9	41.7
	30 - 34	6.9	
	35 - 39	17.2	
	40 - 44	41.4	
	45 – 49	13.8	
	50 and above	13.8	
Educational level	University	31.0	
	Polytechnic	13.8	
	NCE	3.4	
	Secondary	41.5	
	Primary	10.3	
Reason for establishing fish-feed enterprise	For sale only	3.4	
	To feed my fish only	20.7	
	For sale and to feed my fish	75.9	
Main occupation	Feed producer	6.9	
	Fish farming	79.3	
	Public servant	6.9	
	Trading	6.9	
Experience in fish-feed enterprise	1-5	24.1	7.8
	6- 10	44.9	
	11-15	31.0	
Sources of finance	Personal savings	89.7	
	Cooperative society	10.3	

Source: Field Survey data, 2016

Extension Needs of Fish-Feed Producers

Table 2 presents the information needs of fish-feed entrepreneurs. These were represented in areas of information seeking, storage, transportation, credit, processing and energy. The predominant extension needs identified within the categories were combined fuel and solar energy use equipment ($\bar{x} = 4.14$; SD = 5.57), how to maximize gain in fish-feed production ($\bar{x} = 3.90$; SD = 0.31), credit purchase for milling equipment ($\bar{x} = 3.76$; SD = 0.74), training on alternative to fish meal ingredient in fish-feed processing ($\bar{x} = 3.48$; SD = 0.51), method for increasing shelf life of fish-feed ($\bar{x} = 3.07$; SD = 0.46) and means of transportation from feed mill to local market ($\bar{x} = 2.59$; SD = 0.57). The finding implies that fish-feed entrepreneur need adequate and holistic training by extension agents for them to effectively meet the demands of fish farmers in the area.

Table 2: Information needs of fish-feed entrepreneurs

Information needs	Mean*	SD
Information		
Where to procure fish meal at a lower price	3.66	0.48
Training on cost effective fish-feed formulation	3.66	0.48
Linking fish-feed entrepreneur to fish farmers that can buy their fish-feed	3.28	0.84
How to maximize gain in fish-feed production	3.90	0.31
Storage		
Preservation methods of processed feed	3.03	0.19
Storage methods of fish-feed ingredients	3.00	0.01
Method for increasing shelf life of fish-feed	3.07	0.46
Transportation		
Means of transportation from feed mill to local market	2.59	0.57
Means of transportation of feed ingredients from local markets to feed mill	3.17	0.47
Accessible road network	3.17	0.38
Credit		
Linkage with credit institution	3.72	0.84
Credit purchase for milling equipment	3.76	0.74
Credit to procure milling machine	3.73	0.74
Credit to finance transportation	3.48	0.83
Processing		
Training on alternative to fish meal ingredient in fish-feed processing	3.48	0.51
How to meet the standard to export local fish-feed	3.24	0.58
How to acquire extruding machine for processing floating fish-feed	3.24	0.44
Skill training on how to operate modern fish-feed equipment	3.23	0.51
Energy		
Efficient fuel consumption milling machine	3.03	0.19
Solar energy powered equipment	3.07	0.37
Combined fuel and solar energy use equipment	4.14	5.57

Agreed (mean ≥ 2.50); SD=Standard deviation.

Source: Survey data, 2016

Profitability of Fish-feed Production

Cost Analysis

The mean annual operating cost (TVC) incurred by the fish-feed producers for producing an average of 400kg of fish-feed was ₦73,272 accounting for 95.05% of the total cost. Feed ingredients (*clupeid*, soyabean, groundnut cake and millet etc) constituted the dominant cost item, consuming 76.53 % of the total variable cost for the feed producers (Table 3). The total fixed cost (TFC) item accounted for 8.45% of the total cost for the fish-feed producers.

To determine the percentage of total cost on the items cost, the mean value in (₦) of items cost was multiplied by 100 and divided by the total cost. total cost of all inputs used in the course of production. 1, the total cost of all inputs used in the course of producing 400 kilogramme of feed was ₦80,058.04 (Table 3). Therefore, on the average, it cost ₦200.15 to produce a kilogramme of fish-feed in the area.

Table 3: Cost analysis for fish-feed production

Items of cost	Mean value in (₦)	% of TC
TFC	6,768.65	8.45
Feed ingredients	61,269.50	76.53
TVC	73,272.39	91.52
TC (TFC + TVC)	80,058.04	

Source: Survey data, 2016

Cost and Returns Analysis of Fish-feeds

The profitability analysis for investing in fish-feed enterprise is shown in Table 4. It revealed that the gross margin per unit fish-feed was ₦49.85 (Table 4). These indicated that for every kilogramme of fish-feed produced, the return on the total variable cost for the fish-feed is relatively appreciable. This is hinged on the fact that the total variable cost accounted for 91.54 percent for developed fish-feed. The returns of ₦49.85 for a kilogramme of fish-feed was relatively substantial. The net profit analysis showed ₦49.85 was made by fish-feed producers per kilogramme of fish-feed. This gave the net return on invested capital of 25.0 percent for fish-feed of 40 % crude protein.

Table 4: Summary of cost and returns analysis of fish-feeds

Return/cost items operation	Amount(₦)
Quantity of feeds (Kg)	400.00
Total revenue, TR (₦)	100,000.00
Total variable cost, TVC (₦)	73,272.39
Total fixed cost, TFC (₦)	6,768.65
Total cost, TC (₦)	80,058.04
Gross margin, GM	19,941.96
GM per output (₦)	49.85
Net profit, NP (₦)	19,941.96
Cost per output (₦)	200.15
Price per output in (₦)	250.00
Net profit per output in (₦)	49.85
Net return on investment (%)	25.0

Source: Survey data, 2016

Challenges in Fish-feed Enterprise

Data in Table 5 shows the challenges faced by fish-feed entrepreneurs. The result revealed that high cost of fish meal ($\bar{x} = 3.76$; $SD = 0.51$) was the leading challenge faced by the fish-feed entrepreneurs in the study area. Research study has confirmed that fish meal is an essential component of fish-feed and contributes significantly to increased cost of fish-feed production (Ibiyo, 2013). This was followed by lack of access to credit ($\bar{x} = 3.48$; $SD = 0.74$), high cost of operating/replacing worn parts of machine ($\bar{x} = 2.93$; $SD = 3.70$) and lack of production equipment ($\bar{x} = 2.83$; $SD = 0.53$). This collaborates Nwabeze *et al* (2016) findings that access to credit by farmers is a major challenge due to lack of collateral and perilous nature of fisheries production.

Table 5: Challenges faced by fish-feed entrepreneurs

Challenges	Mean	Std. Deviation
High cost of fish meal	3.76*	0.51
Lack of access to credit	3.48*	0.74
High cost of operating/replacing worn parts of machine	2.93*	3.70
Lack of production equipment	2.83*	0.53
Lack of quality milling machine	2.31	0.54
Lack of storage facility	1.76	0.44
Inadequate extension service and guidance	1.62	0.49
Theft/pilfering of production equipment	1.31	0.81
Poor marketing channels	1.24	0.51

*Agreed (mean \geq 2.50)

Source: Survey data, 2016

Conclusion and Recommendation

The study concluded that the extension needs of the fish-feed entrepreneurs are in the areas of information seeking, storage, transportation, credit, processing and energy. The challenges of operating fish-feed enterprise in the area were high cost of fish meal, lack of access to credit and cost of operating milling machine. It was recommended that extension agents should make available information to fish-feed entrepreneurs on existing credit facility and training on cost effective fish-feed formulation. Therefore, linkage with credit sources and training skill on fish-feed formulation should be incorporated into fisheries training to ensure effective extension delivery system.

References

- Akinbile, L.A and Alabi, O.E (2010). Use of ICTs among fish farmers in Oyo State. *Journal of Agricultural Extension*. Vol 14(1), p.28
- Ayanda, J.O (2011). Socio-Economic Analysis of Pond Fish Culture in Ilorin and Minna Metropolises In The Guinea Savanna Zone of Nigeria. PhD Thesis, Department of Fisheries and Aquaculture Technology, School of Agriculture and Agricultural Technology, Federal University of Technology, Akure, p.58
- Food and Agricultural Organisation of the United Nations (FAO) (2002). Agricultural marketing extension. FAO TCP/SAF/0065, No1 Pg 1-24
<http://nda.agric.za/docs/GenPub/1AgriMarketExtension.pdf>. Retrieved on March 5, 2006.
- Food and Agricultural Organisation of the United Nations (FAO) (2006). Nigeria's fisheries profile. www.fao.org/fi/fcp/en/NGA. Retrieved on March 5, 2006.
- Federal Department of Fisheries (FDF) (2008). Fisheries statistics of Nigeria. Federal Department of Fisheries, Abuja.
- Foraminifera Market Research (2016). Floating fish-feed importation in Nigeria, the feasibility report. FORA/2014/09094623/. <http://foramfera.org> Retrieved on November 1, 2016
- Greenfacts (2004). World fisheries production. <http://www.greenfacts.org/fisheries/o4-utilisation.htm>. Retrieved on February, 2006.
- Ibiyo, L.M.O (2013). Development of cost effective fishmeal from local aquatic resources (Clupeids and Lantern fish). *Technical Report*, Project Coordinating Office, WAAPP-Nigeria, Abuja. p.1

- Ifejika, P.I., Oladosu, O.I., Okunade, E.O., Olowosegun, T. and Nwabeze, G.O. (2010). Why youths find it difficult to practice commercial fish farm enterprise in Abia State, South-East Nigeria. *Global Approaches to Extension Practice (GAEP)*, Vol.6, No.2. Pp 34-40
- Nwabeze, G.O (2016). Sustainability of artisanal fishers' ILivelihoods in the Jebba Lake Basin, Nigeria. *Journal of Agricultural Extension* Vol.20 (1), Pp 66-80
- Nwabeze, G.O, Sule, A.M, Omeje, J., Faleke, S, Adelu T, Jikantoro Z and Wara, A (2016). Livelihoods assessment of fishing communities in Swashi Reservoir, Niger State, Nigeria. *Annual Report*, National Institute for Freshwater fisheries research, New Bussa, Nigeria
- Nwabeze, G.O (2011). Roles of Women in Kainji Lake Fisheries Development. In: Raji, A., Okaeme, A.N and Ibeun, M.O (eds) *Forty years on Lake Kainji Fisheries Research*. National Institute for Freshwater Fisheries Research, New Bussa, Niger State, Nigeria. Pp 114-122.
- Oakley, P and Garforth, C.G (1997). Guide to extension training. Food and Agricultural Organisation of the United Nations (FAO), Rome, p.94
- Olorok, J.O (2011). Geography and climate of Kainji Lake Basin. In: Raji, A, Okaeme, A.N and Ibeun, M.O (eds) 'Forty years on Lake Kainji Fisheries Research'. *National Institute for Freshwater Fisheries Research*, June 2011, p.11