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Research

Knowledge, attitude and practice of value addition among fish farmers in Oyo State, Nigeria

Osuntade O.B., Sogbesan R.A., Akinwole O.T. and Babalola, D. A.

Department of Agriculture and Industrial Technology, Babcock University, Ilishan Remo, Ogun State, Nigeria

Corresponding author <osuntadeo@babcock.edu.ng>

Abstract

Many peasant fish farmers encounter difficulties in selling their products profitably, as they mostly experience exploitation from middlemen. This study was carried out to determine the knowledge, attitude and practice of value addition among fish farmers in Oyo State, Nigeria. A multi-stage sampling technique was employed in selecting 132 respondents from the ADP provided list, out of which there were 120 responses (58 practicing and 62 none practicing). Data collected were analyzed and presented using descriptive statistics and t-test. Majority (77.5%) opined to be knowledgeable in Value Addition procedures with most of them (89.2%) showing interest in knowing more. The result of the paired sample, t-test, at 5% level of probability, revealed a significant difference ($p=0.010$, $t = 2.933$) between practicing and non-practicing farmers. The implication of this, the practice of value addition influenced farmer's incomes. The study concluded that value addition is important in achieving profit maximization in fish farming and most farmers are willing to engage in the value addition practices; the most common value addition in the study area is smoking, The study therefore recommended hands-on trainings on the practices of value addition and new and other practices should be introduced for diversification.

Keywords: Knowledge, Attitude, Practice, Value Addition, Fish Farming

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Introduction

Aquaculture is a water-based farming system, cultivation of aquatic organisms under controlled or semi-controlled conditions for economic and social benefits. This is also a type of agricultural activity which is one of the fast growing major food industry currently producing 53 percent of the global fish consumed and it is largely responsible for doubling the per capita fish consumption of fish products since 1960s (Ifeanyi, 2016; FAO, 2018). Fish represents an important dietary element and one of the few sources of animal protein available to average household and consumed by all the strata of the population, Fish farming contributes considerably to the economy, creating employment opportunities in rural and urban areas, in Nigerian households and other developing counties which is helping in the improvement of national food security.

Fisheries in the inland and near-shore still play important role in local food security by providing a direct supply of fish as food as well as income from sale of fish. It has been established that the livelihoods of millions of people worldwide are dependent on fish farming and that the fishery industry is crucial to the world economy (Olorunfemi, 2015; Iheke and Nwagbara, 2014; Kolawole, 2012; Olasunkanmi, 2012 and Nwachukwu, 2007). FAO, 2020 opined that, countries gifted with fisheries along their coasts, in rivers, lagoons and flood lands meet a significant portion of their total food and nutritional requirements from fish; more than 80 percent of Nigeria's total domestic production generated by artisanal small-scale fishers from coastal inshore, creeks of the Niger Delta, lagoons, inland rivers and lakes.

Moreover, fish protein has been reported to be highly digestible as well as highly resistant to denaturation. For the above reasons, most countries in the tropics, including Nigeria, have turned their attention to the development and utilization of their fisheries resources as a means of providing their citizens with the needed animal proteins (Kolawole, 2012). In Nigeria, domestic fish is a preferred protein that rivals red meat in consumer demand.

Value addition of a produce improves the natural and conventional form, quality and aesthetic of same which subsequently increase consumer valuation (Mwinyihija, 2010). Since use of value addition is the driver of profit maximization in the aquaculture sector, an efficient extension service should be the pillar of these efforts (Adekunle, 2013). Value addition in fish farming is an important strategy that adds economic value to fish, widens the market performance and reduces the problem of post-harvest losses in sub-Saharan Africa (Kyule, 2014, Mohamad, 2011).

The processing and preservation of fish are of utmost importance since fish is highly susceptible to deterioration immediately after harvest and hence the need to prevent

economic losses. Processing of fish into forms for human consumption or suitable to be used as a supplement in animal food has been neglected in fish culture practices in Nigeria (Okonta, 2005) . This may be due to the high technology required in some of the processes and the fact that those involved in actual fish production are ignorant of the different processing methods. In other to prevent fish deterioration, every fish processor must strive to employ the best method possible in handing fish to maximize returns on processing investment (Davies, 2005).

Despite the huge gap between demand and supply, Nigerian fish farmers seem not to be able to fully maximize the prospects in the sector due to the underdevelopment and lack of value addition resulting in low profit margin or inability to break even in some cases and higher input cost (Union, 2011; Adefalu, 2013.) . This study therefore sought to access the knowledge, attitude and practice of value addition among the fish farmers in Oyo State by specifically identifying the various value addition practices used by fish farmers in the study area and highlighting the constraints faced by the farmers, the study also sought to find out if there are significant differences between farmers practicing value addition and the farmers not practicing value addition.

MATERIALS AND METHODS

This study was conducted in Oyo East Local Government Area of Oyo State, Nigeria. A multi-stage sampling technique was employed in selecting respondents. Oyo East was selected based on the predominance of fish farming in this area. A list of 202 fish farmers provided by the Oyo State Agricultural Development Programme (OYSADEP) being stratified into those practicing and those not practicing was used. A simple random selection was used to select 132 fish farmers, out of which 120 responded (58 participants and 62 none participant proportionate to size of stratum, using Yamane 1973, formula) from the ADP list.

$$n = N\,1 + (N)(e\,2)$$

Where

- N= sample population(202) .
- n= sample size.
- e= marginal error = 0.05(constant).

Primary data were collected from the farmers, using a well-structured questionnaire for farmers. The primary data were collected on the socio-economic characteristics and demographic information such as ancestry, sex, age, and prior experience in value addition. Data were also collected on the other variables of the fish farmers which included value addition knowledge assessment; which opened them to the practice of value addition attitude assessment and practice assessment questions. This study employed a number of analytical tools based on the objectives of the study; data were described using descriptive statistics such as frequency distribution and percentages; and the data were analyzed with the aid of ***T-test analysis*** and presented using tables.

Results and Discussion

Results of the Descriptive Statistics

Results in Table 1 showed that about 61 percent of the fish farmers were in the age range of 25-45 years. This implies that quite a high percentage of the fish farmers were still very young and active in the fish farming business. The implication is that younger farmers may be more disposed to adopt innovations faster than the older ones, furthermore, there is likely to be potential for more labour input on the farms since most of the farm operations by small scale farmers in Nigeria are still carried out manually using low technology. An economically active age indicates better future for fish production. This is expected to result in a positive influence in fish production level.

The study also showed that majority (81.7 %), of the respondents were males. This indicated the dominance of male in fish farming in the study area. Since fish farming requires a lot of energy which most male tend to possess, this may be a reason among others why the sector is dominated by males. This result agrees with those of Olawoye (2001) and Ayanwuyi *et al (*2010) who in separate studies in Oyo State, found that more males were involved in catfish production than their female counterparts.

Furthermore, more than half (60%) of the sampled farmers were married. This suggests availability of family labour in fish farming which could reduce operational or labour cost (as against hired labour). Moreover, the study also implies that fishing business is not for the married only; it is a source of employment to the teaming population of the unemployed youths since there are limited white collar jobs (Ben-Chendo et al., 2013).

The distribution of respondents according to their household size showed that about 57 percent of the fish farmers had their family size between the range of 1-5. This could be due to the young age of the majority. This implies that enough hands (family labour) were engaged in carrying out fish farming operations. This result agrees with Ladu *et al.,* (2013) who in a separate study found that family size can serve as a source of free and cheap labor as children of the different sexes engage in helping their parents or guardians to market different forms of fish. The involvement of these children in marketing of processed fish helps in timely marketing thereby reducing post-harvest loss.

Table 1: Descriptive Characteristics of Fish Farmers n= 120

VARIABLES	PERCENTAGES
Age	
15-25	24.2
25-35	30.8
35-45	30.0
45 and above	15.0
Sex	
Male	81.7
Female	18.3
Level of Education	
Primary Education	10.8
Secondary Education	32.5
Tertiary Education	54.2
Non-formal Education	2.5
Marital Status	
Married	60.0
Single	31.7
Divorced	6.6
Widow	1.7
Household size	
1-5	56.7
6-10	26.7
11-15	16.6
TOTAL	**100**

SOURCE: Field Survey, 2020

Results from the study as revealed in Table 1 showed that more than half (54.2%) of the respondents have tertiary level of education. The implication of this finding is that most of the fish value chain actors in the study area were moderately educated with different educational background. This might be due to the metropolitan nature of the study area and is expected to have a positive correlation with production as these actors avail themselves for the adoption of new innovations in their methods of fish production and processing. This finding is in line with Ajana (2005) and Seyoum *et al* 1998) who in separate studies found that farmers with more years of formal education tend to be technically efficient than the farmers with no education and education is a major determinant of the nation's economy.

Results of Farmers' Enterprise

Results presented in Table 2 showed that almost half (47.5%) of the respondents had farming experience between 1-5 years. The longer one is involved in farming, the more one masters the art and science of the enterprise, *ceteris paribus*. This then suggests that all the respondents have different years of hand on experience which is expected to have a positive influence on fish production in the area. This result is in consonance with the findings of Awodu et al. (2001) & Akinrotimi

et al., (2010) who in their study of brackish water aquaculture status in Rivers State found that the ability to manage fish pond efficiently depends on the years of experience. In line with the findings of Obare et al. (2010), years of farming experience has a positive and significant relationship with a farmer's economic efficiency. This implies that the higher the level of experience of the farmer, the higher his cost efficiency level will be.

Results presented in Table 2 further showed that 57.5 percent of the respondents' income was ₦150,000- ₦ 250,000, and 43.5 percent had incomes above ₦250,000-350,000. The farmer's income is seasonal with farmers making 35% from their harvest; hence, value addition is important.

Results presented in Table 2 further showed that less than half (40.8%) of the respondents were members of cooperative societies. Naturally, being members of associations afforded fish farmers to benefit from financial institutions and/or lending agencies since such requirement is a determinant factor. Farmers who belong to cooperatives are better informed on resource use and farm planning which enables them to utilize resources more efficiently and they are better exposed to various value addition practices available and how to carry them out. Membership of cooperative organizations is expected to have a positive influence on allocative efficiency (Obare et al., 2010).

Respondents' current knowledge of Value Addition

A 7-question construct was developed to measure the present knowledge of the farmers on Value Addition. Most of the respondents scored 100% on the 7- question construct that was used to measure knowledge in the questionnaire. The results showed that majority (77.5%) of the participants agreed that value addition transforms an unprofitable enterprise into a profitable one, about 60 percent believed that value addition improves the natural and conventional form, as well as quality and appeal of a product. Results of the study further revealed that majority (71.7%) of the respondents believed that value addition is the driver of profit maximization, 61.7% believed that value addition adds economic value to fish, 68.3% believed that value addition widen the market performance of fish, 56.7% stated that they had engaged in value addition practices previously, while only 55.8% believed that value addition is encouraged.

Table 2: Farmers' Enterprise n=120

Variables	Percentage
Experience on Fish Farming	
1-5	47.5
5-10	36.7
10-15	13.3
20 and above	2.5
Monthly Income From Fish Farming (in naira)	
50,000-150,000	15.8
150,000-250,000	57.5
250,000-350,000	18.3
350,000-450,000	5.0
450,000-550,000	1.7
550,000 and above	1.7
Membership of Cooperative Society	
Yes	40.8
No	59.2

SOURCE: FIELD SURVEY, 2020

Respondents' attitude towards Value Addition

For respondents' attitude towards value addition, another 7-question construct was developed to test the attitude of fish farmers towards value addition. The result showed that 89.2 percent stated that they would like to learn more about value addition, 62.5 percent felt that it is important for a farmer to learn about value addition, 61.7 percent stated that they would like to practice value addition, 74.2 percent stated that they would like to invest in the value addition of fish farming, 64.2 percent stated that they would like more awareness programs of value addition programs, 61.7% stated that they would encourage other farmers to engage in value addition, and 55.0 percent stated that they would like to be more aware about various forms of value addition that are particular to fish enterprise.

Constraints faced by the fish farmers in the study area.

The major constraints to fish production identified by the farmers are time consumption in value addition , low market demand of value added fish, lack of skills and tools involved in value addition, misconception that value addition is done because of lack of storage facilities, tedious tasks in value addition. Marketing problem as a result of market price fluctuation is another major problem faced by the fish farmers in the study area. Many farmers sell their fish in fresh form to middle-men at very low prices. Lack of processing or storage facility to process or store their fish during glut also constitutes a major constraint for the fish production in the study area. The most common reason for processing or storage is to take advantage of hike in price later in the season, as this is in accordance with Dunlap, 2006, which opined that value addition in fish

improves that profit potentials of farmers. This practice is very difficult in the area due to high cost of storage facility, which fish farmers cannot afford. Other major problems identified in the study area are flooding during the rainy season as a result of excess rainfall, inadequate water due to lack of rainfall, poaching or theft as a result of lack or inadequate security, predators, high mortality rate as a result of poor management and disease and pest infestation which are adversely affecting fish production in the study area.

Result for the comparison of the Incomes of Respondents practicing Value Addition and those not practicing

The result of the paired sample T-test, at 5% level of probability (Table 3), revealed a significant difference in the income of farmers practicing value addition and the farmers not practicing value addition. Income of farmers practicing value addition is higher than that of the farmers who are not practicing value addition. The implication of this is that the practice of value addition significantly influences the farmer's income. This implies that the practice of value addition is a supposedly productive venture which should be emphasized among fish farmers as corroborated by Olorunfemi, 2015 who stated that value addition is a means that could bridge the gap between demand and supplies of the fish industry.

Table 3: T-test result comparing the incomes of respondents practicing value addition and those who are not practicing value addition

	Mean. (₦'000)	**S.D.**	**t-value**	**Sig (2-tailed)**	**N**
Income of farmers practicing VA	217.9487	.95830	2.933	0.010	58
Income of farmers not practicing VA	210.2564	1.04045		1.081	62

significance at 0.05

Conclusion and Recommendation

The findings of this study have revealed that value addition is an important aspect that can help increase the profit potentials of fish farmers in the study area. However the study recommended that, in order to improve value addition in fish farming business there should be proper sensitization and awareness on value addition practices, there is need for more education on other value addition practices that the farmers in the study area are not aware of. Fish production has great potentials in the

study area, hence policies that will create an enabling environment and attract more youths to invest in fish production should be formulated, as this will create room for new ideas and increase level of productivity by the farmers towards achieving food security.

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