



CAPACITY BUILDING NEEDS OF FISH FARMERS ON VALUE ADDITION INITIATIVES IN KOGI STATE, NORTH CENTRAL NIGERIA

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ABSTRACT

The paper is an investigation of fish farmers' capacity building needs on value addition initiatives in Kogi State, Nigeria. Data were collected using a two-stage sampling technique to select sixty respondents for the study. A purposive selection of one LGA each from the two ADP administrative zones (Zones A and C) in Kogi State where fish farming is prominent and well practiced was carried out. Thirty fish farmers were then randomly selected from the fish farmers' association chapter present in each selected LGA. Interview-schedule was used to elicit information from the respondents. The findings indicated that the fish farmers fall into the economically active age group with a mean age of 48.1 years, majority (81.7%) were males, married (88.3%) and had one level of formal education or the other (85.0%). The respondents value addition initiatives use profile was still very low and high capacity building on value addition initiatives were needed in seven major areas. Chi-square analysis revealed a significant relationship between the respondents' capacity building needs on value addition initiatives and their age, educational level, years of experience and fish farm income. The study concluded that value addition initiatives used in fish farming was still very low in the State. It was recommended that there is an urgent need to package robust capacity building programmes and advisory services by extension and other stakeholders for fish farmers in the major areas of capacity deficiencies indicated so as to enhance their use of value addition initiatives from fish production to marketing.

Keywords: Capacity building needs Fish farmers, Value Addition Initiatives, Kogi State, Nigeria.

1.0 INTRODUCTION

Hunger, malnutrition, and poor health are widespread and pose serious development challenges hindering economic development in Nigeria. These can only be overcome by providing the ever rising human population with better and more profitable employment opportunities to improve their livelihoods [1] and also adequate nutrition to reduce the nutritional deficiencies prevalent in Nigeria [2]. 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 [3 & 4]. Fish farming continues to be the fastest growing animal food-producing sector and it outpace population growth [5]. While capture fisheries production stopped growing around mid-1980, the aquaculture sector has maintained an average annual growth rate of 8.7 percent worldwide (excluding China, 6.5 percent) since 1970 [5]. ICLARM [6], reported that aquaculture appear to be one of the last frontiers to increase contribution to food security in the developing world and it now represents the fastest growing agricultural industry in some countries, with fresh water aquaculture

dominating total aquaculture production. Food and Agricultural Organization of United Nations [7] showed that Africa had much aquaculture potential indicating an opportunity to improve food security, nutrition and income generation among the poor. However, aquaculture is generally practiced on a small scale in Africa usually as simple, low input, fresh water pond culture, considering its size and demand for fish products, the continent produces very little only about 0.5% of the world aquaculture output and about 80% of this is produced by just two countries which are: Nigeria and Egypt [5].

Nigerians are high fish consumers and offer the largest market for fish and fishery products in Africa [8]. Fisheries occupy a unique position in the agricultural sector of the Nigerian economy. The contribution of the fisheries sub-sector to agriculture GDP was estimated as 4.0% in the year 2007, out of the total estimate of 40% being contributed by agriculture to GDP [9]. Fish demand in Nigeria is put at about 1.2 million metric tons per annum, and the total domestic fish production can only supply 511,700 metric tons, leaving a shortfall of 680,000

metric tons of fish annually [10]. To meet the local demand, government imports fish worth of N97 billion annually [11]. This indicates the large deficit in fish supply in Nigeria. This trend of high import bills for fish products seems to be increasing and this is not a good pointer for the economy. This therefore opens up a multitude of opportunities for Nigerian fish farmers. Despite the large available market for fishery and aquaculture products, many fish farmers still encounter difficulties in selling their products profitably. [12] revealed that only 25% of the 40 fish farms sampled in South West Nigeria operated their fish farming enterprise profitably while the remaining 75% were not. This shows that despite the buoyant market available for fish products, many fish farmers are still experiencing low profit margin or even inability to break even. Fish farmers now experience pressures that come not only from lower selling prices, but also from higher input cost [13]. This situation has led to some of the farmers opting out of the aquaculture sector due to increased input costs and stagnant selling prices. Several visible pointers have revealed that, a major reason why fish farmers seem not to have been able to harness the potential in the sector could be due to the inadequate use of value addition initiatives. Therefore processes connected with value addition initiatives appear to be one of the keys available to unlocking and improving the economic situation of this sector. The pursuit of agricultural value addition initiatives, then, may be seen as a strategic response to the increased tension in the aquaculture sector.

At this point however, it is important to note that not much has been achieved by extension services and other stakeholders in promoting value addition initiatives in the aquaculture sector. This is evident as revealed by [14] who reported that a very low percentage of fish farmers were involved in processing and preserving their fish produce in studies carried out in areas within North Central Nigeria which is a very important initiative in value addition. Therefore, there is the need to shed light on the activities of fish farmers as it relates to the use of value addition initiatives in order to speed-up efforts and properly refocus strategies employed by extension in developing advisory extension services on value addition initiatives in its various forms in the sector. Thus, this study is carried out as an attempt to proffer solutions for a more profitable regime for fish farmers focused on the capacity building needs of fish farmers on value addition initiatives in Kogi State, Nigeria. Specifically, the study sought to describe the socio-economic characteristics of the fish farmers in Kogi State, examine the value added initiatives use profile of the fish farmers, investigate the percentage contribution of proceeds from fish farming to income of the fish

farmers and identify the capacity building needs of the fish farmers on value addition initiatives.

2.0 METHODOLOGY

The study was conducted in Kogi State. The state is located in the North-Central geopolitical zone (middle-belt) of Nigeria in the areas that extend roughly from latitude 6°30' to 11°05' north of the equator and longitude 2°5' to 7°45' east of the prime meridian. This area is largely located in the savannah region of Nigeria. It is an ecological transition zone between the arid north and the moist south with temperature fluctuating between 30°C – 37°C in the year and rainfall of 1000 to 1500 mm annually [15]. The target population for this study comprises the fish farmers in Zones A and C agro-ecological zones of Kogi State. This is the zone where fish farming is prominent in the State.

Data collection was carried out with the aid of a structured interview schedule. A two-stage sampling technique was employed in the selection of the respondents. A purposive selection of one (1) LGA each from the two ADP administrative zones (Zones A & C) in Kogi State where fish farming is prominent and well practiced was carried out based on the information obtained from the State' ADP and Ministry of Agriculture. These LGA are Kabba-Bunu and Lokoja. Thirty (30) fish farmers which constituted an average of about one-third of the registered fish farmers present in the LGAs was randomly selected from the fish farmers' association chapter present in each selected LGA. This gave a total sample size of sixty (60) fish farmers. Data were collected on the socio-economic characteristics of the fish farmers, their value addition initiative use profile, and contribution of proceeds from fish farming to farmers' income while the dependent variable was the fish farmers' capacity building needs on value addition initiatives. These variables were measured as follows:

2.1 Training/Capacity Building needs on Value addition Initiatives

- a) Previous Training Received: Respondents were asked whether they have received any previous training on fish farming. This was rated as No (1) and Yes (2)
- b) Willingness to participate in training on Value Addition: Fish farmers were asked of their willingness to participate in capacity building trainings on value addition initiatives. This was rated as No (1), and Yes (2)
- c) Willingness to pay for training on Value Addition: Respondents were asked to indicate whether they are willing to pay for training on value addition initiatives in fish farming. This was rated as No (1) and Yes (2).

- d) Respondents were presented with a list of capacity building/advisory services they may need on value addition initiatives and they were asked to rate these items on a 3-point likert type scale of Highly needed (3), Moderately needed (2), and Not needed (1).

2.3 Value Addition Initiative use Profile of the Fish Farmers

Analysis of the use of Value addition initiatives was carried out using the fish farmers' responses to different initiatives used in fish farming enterprise. Respondents were asked to indicate their value addition initiative use level on six dimension which are production initiatives consisting of 8 items, pre-processing initiatives consisting of 5 items, processing initiatives consisting of 6 items, smoking initiatives consisting of 8 items, packaging initiatives consisting of 5 items and marketing initiatives consisting of 8 items. These six segments contain a total of 40 initiative items that are being used in fish farming. Respondents were instructed to indicate their level of use of these items using a 3-point likert scale of Used always (3), Used sometimes (2) and Not Used at all (1). A breakdown of the score in each segment was determined thus: production initiative use score was determined from a range of 8 (lowest) to 24 (highest); processing initiatives (combining pre-processing, processing and smoking initiatives) use score was from 19 (lowest) to 57 (highest); packaging initiative use score was from 5 (lowest) to 15 (highest) and marketing initiative use score was from 8 (lowest) to 24 (highest). The overall Value Addition Initiative Use Score of the respondents was determined from a range of 40 being the lowest level of use to 120 being the highest level of use score possible.

From their responses, the fish farmers were then classified into whether they have a low (non-use) use of value addition initiative or a high use of value addition initiative. Respondents with a total score of 40 – 79 were interpreted as low use of value addition initiatives while those with a score of 80 and above (which is about 50% and above of the total score possible) were considered to represent high value addition initiative use.

2.4 Contribution of Proceeds from Fish Farming to Farmers' Income

Fish farmers were asked to indicate their annual income and this was coded on a scale of N500,000 – N700,000 (1); N701,000 – N900,000 (2); N901,000 – N1,100,000 (3); N1,101,000 – N1,300,000 (4); N1,301,000 – N1,500,000 (5); > 1,500,000 (6).

2.5 Annual Income from Fish Farming

Respondents were asked to indicate the amount of money realized from fish farming enterprise on a yearly basis on a scale of 100,000 – N400,000 (1); N401,000 – N700,000 (2); N701,000 – N1,000,000 (3); > N 1,000,000 (4).

2.6 Percentage Contribution of Proceeds from Fish Farming to Farmers' Income: This was calculated as follows:

$$\frac{\text{Annual proceed from fish farming enterprise}}{\text{Annual farmers income}} \times \frac{100}{1}$$

2.7 Data Analysis

Data analysis was carried out using descriptive statistics such as frequency counts, percentages, mean scores, and ranks while Chi-square analysis was used as an inferential statistics to test the significance of the relationship that exist between selected socio-economic characteristics of the respondents and their capacity building needs on value addition initiatives.

3.0 RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Fish Farmers

Results from Table 3.1 show that the mean age of the respondents was 48.1 years. Consequently, the fish farmers were generally in their economically active years, indicating their ability to leverage on this attribute for a high degree of prospects and viability in value added production. This results agree with that of [14 & 16] who reported that young able bodied men were the ones largely and actively involved in fish farming. This buttresses the fact that fish farming also requires a high sense of maturity, vigour and energy which might be difficult for the aged to do. All these conform to the general view that modern fish farming requires people of the active age group (below 51 years) that are strong and have the required skills and knowledge [17].

The results obtained from the study indicated that there was more males (81.7%) involvement in fish farming than females (18.3%). This is in agreement with [8, 18 & 19] who revealed that males were mostly involved in fish farming than females. This can be attributed to the tedious nature of fish farming particularly in the aspect of culturing, as noted by [20].

As further presented in Table 3.1, majority (88.3%) of the respondents were married while others (11.6%) were either single (5.0%), widowed (3.3%) or separated (3.3%). This agrees with [8, 16] who reported similar trends in their study. This implies that most of the fish farmers have family

responsibility ties that will require more financial commitment which may serve as an impetus for them in adopting recommended fish farming practices that can enhance increased productivity leading to more income.

The mean household size was 7 persons (Table 3.1). This was a little higher than the average persons per rural household as established by the National Bureau of Statistics (NBS) [21]. This finding shows that, the respondents had large number of dependent thus great family responsibility. This is in consonance with the report of [22] where most of the fish farmers in Oyo State were also married with dependents.

Majority (85.0%) of the respondents were literate while others (15.0%) had no formal education. This suggests that fish farmers were predominantly

literate. The result agrees with [14 & 19] where they stated that most of the fish farmers in Kwara and Osun State, Nigeria respectively had formal education. Also, [23] reported similar findings. They observed that successful fish farmers in Niger Republic were literate. Being literate will likely confer on the fish farmers' capacity to learn and be positively disposed to relevant information that can enhance their competencies in fish farming and use of value addition initiatives.

Majority (85.0%) of the respondents had 5 years and above fish farming experience. On the average, the fish farmers have been into fish farming for 8.9 years. This implies that majority of the respondents had some level of experience in fish farming. As revealed by [23], experience is a risk management factor in fish farming. They agreed that new entrants into the aquaculture sector are at a higher risk compared to experienced fish farmers.

Table 3.1: Socio-economic Characteristics of respondents

Socio-economic Characteristic	Frequency	Percentage (%)	Mean	Std. Dev.
Age (Yrs.)				
≤ 30	1	1.7	48.1	8.7
31 – 40	14	23.3		
41 – 50	21	35.0		
51 – 60	20	33.3		
> 60	4	6.7		
Gender				
Male	49	81.7		
Female	11	18.3		
Marital Status				
Single	3	5.0		
Married	53	88.3		
Widowed	2	3.3		
Separated	2	3.3		
Household Size				
1 – 4	8	13.3	7	
5 – 8	43	71.7		
9 – 12	8	13.3		
> 12	1	1.7		
Educational Level				
No formal Education	9	15.0		
Primary Education	24	40.0		
Secondary Education	17	28.3		
Tertiary Education	10	16.7		
Fish Farming Experience				
≤ 4	9	15.0	8.9	3.6
5 – 9	23	38.3		
10 – 14	22	36.7		
> 14	6	10.0		

Source: Field Survey, 2014

N = 60

3.2 Value Addition Initiatives Use Profile of the Respondents

It is revealing from the table that majority (80.0%) of the fish farmers had a low value addition initiative use score in fish farming while just a few (20.0%) of the respondents had a high value addition initiative use score. The mean value addition initiative use

score for the study was 65.5 (score ranges from 40 minimum – 120 maximum) signifying a low use of value addition initiative among the respondents. This result agrees with [4] who also reported a low use of fish technologies by fish farmers in Nigeria. The implication of this is that most of the fish producers in the study area make use of very little ideas,

innovations, technologies and strategies that can bring about faster time of production output, form or place improvement in their processes and products which are capable of increasing the proportion of income accrued to them. This may be a pointer to

why the farmers are experiencing stagnation in their income in this sector. [24] found out that producers that conduct both product and process value added innovations generate more income and are better able to compete favourably in the market and keep pace with competitors.

Table 3.2: Distribution of Respondents according to their Total Value Added Initiative Use Level in Fish Farming Production

Value Added (VA) Initiative Use Level	Frequency	Percentage (%)
Low VA Initiative Use (40 – 79)	48	80.0
High VA Initiative Use (80 – 120)	12	20.0
Total	60	100.0

Source: Field Survey, 2014.

3.3 Contribution of Proceeds from Fish Farming to Income of Fish Farmers

Table 3.3 shows that the mean percentage contribution of fish farming to respondents' total annual income was 47.1% with a standard deviation of 11.7. More than half (58.3%) of the total respondents earned 41 – 60% of their annual income from fish farming, 23.3% of the fish farmers earned 21 – 40% while 16.7%, 1.7% and 0.0% of them earned 61 – 80%, 0 – 20% and 81-100% respectively of their annual income from fish farming. This

implies that quite a number of the respondents were most likely to be dependent on income from fish farming thus this could be the reason why they gave more attention to this enterprise which served as a major source of their livelihood. This agrees with [18] who stated that majority of fish farmers engage in fish farming as their main occupation. This is expected to make them more receptive to innovations and use value added initiatives that can increase their income through this sector.

Table 3.3: Distribution of Respondents according to the Percentage Contribution of Proceeds from Fish Farming to their Income

Percentage Contribution of Fish Farming Proceeds to Income	Frequency	Percentage (%)	Mean	Std. Dev
0 – 20	1	1.7	47.1	11.7
21 – 40	14	23.3		
41 – 60	35	58.3		
61 – 80	10	16.7		
81 – 100	0	0.0		

Source: Field Survey, 2014

N = 60

3.4 Fish Farmers Capacity Building Needs on Value Addition Initiatives

According to figure 3.1, majority (68.6%) of the respondents indicated that they had not participated in any form of fish farming training while less than one-third (31.4%) indicated they have received one form of training or the other as it relates to fish farming. This goes further to reveal that not much has been done by extension services in extending training as it relates to the use of value addition initiatives to the fish farmers. The implication of this is that majority of the respondents are not equipped properly with the requisite knowledge needed in fish farming before venturing into the enterprise and so they usually will have to learn a lot of things by their personal experience in the business. This might be a pointer to why majority of the respondents do not

have a high value addition initiative use score. [25] asserted that training is the most singular factor that affects individuals' attitude, productivity, improvement, minimization of risks and quality of job performance in any endeavour. Their use of value added initiatives might be limited to only those initiatives they are able to personally conceive from their experience over the years and if they have a somewhat good information seeking behaviour, they also might be able to use more value added initiatives based on those initiatives they are able to gather from the experience of neighbour and friends around them. This should therefore gear up extension services to rise to the challenge of being the pillar in disseminating value added initiatives, innovations, and technologies to the fish farmers for better profit maximization.

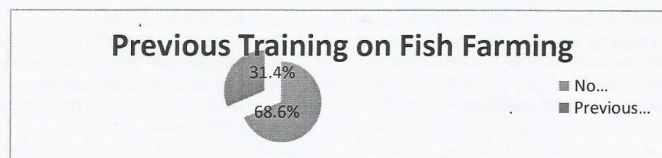


Figure 3.1: Distribution of Respondents' according to their previous participation in Fish Farming Training
Source: Field Survey, 2014

Table 3.4 shows the respondents' distribution based on their capacity building needs on value addition initiatives in fish farming. Using mean score to rank the capacity building items according to their order of need as indicated by the respondents', capacity building was highly needed on "Improved fish farm design, construction and management practices" (MS = 2.74), "Improved processing techniques and initiatives" (MS = 2.74), "Post-harvest handling of fish products" (MS = 2.67), "Fish seed production and hatchery management" (MS = 2.66), "Improved packaging and labelling initiatives" (MS = 2.65), "Proper record keeping" (MS = 2.57) and "Safety and quality of products under hygienic conditions" (MS = 2.46) as they ranked 1st, 3rd, 4th, 5th, 6th, and 7th respectively. The table further showed that the other areas of capacity building were moderately needed

by the respondents. The implication of this is that the fish farmers in the study area have an urgent need to have their competence in the use of value addition initiative in fish farming enhanced in the areas indicated for high capacity building. [26] noted that capacity building helps farmers acquire necessary skills to upgrade their production practices with positive implication on the efficiency of their production. Therefore, government, extension agents and other stakeholders in the aquaculture sector should focus more attention on educating and enlightening the fish farmers on these areas of high capacity building needs in order to enhance their use of value addition initiatives which will thus translate into better income and improved livelihood for the fish farmers.

Table 3.4: Fish Farmers Capacity Building Needs on Value Addition Initiatives

Advisory Services & Capacity Building Needs	Mean Score	Rank
Improved Fish farm design, construction & Management practices	2.74	1 st
Feed ration formulation, nutrition and feeding	2.43	9 th
Fish seed production & Hatchery management	2.66	4 th
Proper water monitoring and management	2.33	10 th
Personal entrepreneurial skills and initiatives	2.20	11 th
How to diversify your markets	2.11	14 th
Maximizing Marketing Techniques & Channels in your area	2.16	12 th
Post-harvest handling of Fish products	2.67	3 rd
Improved processing techniques and initiatives	2.74	1 st
Various products & by-products obtainable from fish farming	2.14	13 th
Group cooperation, dynamics and networking	1.90	16 th
Improved packaging and labelling initiatives	2.65	5 th
Disease diagnosis, prevention and control	2.45	8 th
Proper record keeping	2.57	6 th
Access and use of some improved fish farming tools and technologies	1.97	15 th
Standardization of products for both domestic and export markets	1.89	17 th
Safety and Quality of products under hygienic conditions	2.46	7 th
Mean Score derived from HN=3, MN=2, NN=1;		N=60
Source: Field Survey, 2014.		

3.5 Relationship between Respondents' Socio-Economic Characteristics and their Capacity Building Needs

Table 3.5 shows that there is a significant relationship between the fish farmers capacity building needs on value addition initiatives and their age ($X^2 = 9.242$), educational level ($X^2 = 3.682$), fish farm income ($X^2 = 12.463$) and years of fish farming experience ($X^2 = 3.324$), thus the null hypothesis was rejected. The result further revealed that there is no significant relationship between respondents' capacity building needs on value addition initiatives

and their gender, household size and marital status, thus the null hypothesis was accepted. The implication of this result is that respondents' capacity building needs on value addition initiatives is most likely to be influenced by their age, educational level, years of fish farming experience and fish farm income while fish farmers' gender, marital status and household size may not have any significant influence on their capacity building needs on value addition initiatives in fish farming.

Table 3.5: Relationship between selected socio-economic characteristics of respondents and their capacity building needs on value addition initiatives

Variable	df	X^2	Significance	Decision
Age	4	9.242	0.041	Reject Ho
Gender	1	1.965	0.694	Accept Ho
Household Size	3	4.523	0.348	Accept Ho
Educational Level	3	3.682	0.001	Reject Ho
Fish Farming Experience	3	3.324	0.027	Reject Ho
Fish Farm Income	3	12.463	0.045	Reject Ho
Marital Status	3	2.194	0.287	Accept Ho

Source: Field Survey, 2014

Significant level $p \leq 0.05$

CONCLUSION

Based on the findings of the study, value addition initiative use in fish farming was still very low in the study area despite the fact that fish farming accounted for more than one-third of the respondents' total annual income. The high number of farmers with no training in fish farming coupled with their indication of high capacity building needs in major value addition areas may have accounted for the low level of use of value addition initiatives by the fish farmers.

The study therefore recommended an urgent need for the packaging of robust capacity building programmes and advisory services for fish farmers by extension workers, government agencies, Non-Governmental Organisation and other stakeholders in the major areas of value addition initiative capacity deficiencies indicated. This will enhance their use of value added initiative from production to marketing in order to increase the level of income accrued to them thus making the enterprise more profitable.

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