NIGERIAN JOURNAL of AGRICULTURE FOOD AND ENVIRONMENT.

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ISSN 0331-0787

A Publication of Faculty of Agriculture
University of Uyo, Uyo,
Akwa Ibom State, Nigeria

www.njafe.org

Volume 15 **2019** **Number 1**

NIGERIAN JOURNAL

OF
AGRICULTURE,
FOOD AND
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(ISSN: 0331-0787) is published quarterly by the Faculty of Agriculture,
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ISSN: 0331 - 0787

Printed in Nigeria by:

Wilonek Publishers
28 Ekpanya Street, Uyo
Akwa Ibom State.

Phone: 234 7083377116
E-mail: wilokekres2011@yahoo.com

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THREATS TO FISH FARMING INFORMATION USE EFFICIENCY IN A MULTI-COMMUNICATION INFRASTRUCTURAL SYSTEMS IN AKWA IBOM STATE

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ABSTRACT

This study examined threats to fish farming information use efficiency in a multi communication infrastructural system in Akwa Ibom State. It specifically determines the socio-economic characteristics and examined constraints to the use of available information sources faced by respondents. The study employed two-stage sampling technique in the selection of respondents. Constraint to Utilization of Fish Farming Information Sources Questionnaire (CUFFISQ), designed by the researchers was used to elicit information from 210 fish farmers who have registered with Aquaculture unit of Akwa Ibom State Department of Fisheries. Collected data were analysed through the use of descriptive statistics (frequencies, percentages, means and incidence index). Findings revealed that 85.7% of the fish farmers were males while 19.0 percent were females. The dominant age bracket of 25-40 years old constituted 44.8% of the sampled population. Majority (42.8%) of the respondents acquired Secondary School education. Lack of incentives (85.7%) was reported as a key constraint to utilization of fish farming information sources. This was followed by lack of money to acquire information sources (75.4%) and then high cost of adoption (52.8%). Lack of interest (0.161), low technical know-how (0.124) and Illiteracy (0.075) were reported by less than 2% of the respondents. It was recommended that adequate training centers, access to ICTs centers and increase in extension agent ratio should be put in place to ameliorate the severity of the constraints faced by the respondents in utilizing the available sources of information in the study area.

Keywords: Constraints, Information, Utilization, Fish Farmers, Akwa Ibom State.

INTRODUCTION

Fishes constitute one of the most diverse groups of animals that live and breathe in water by means of gills, known to man with more than 20,000 species. Nigerians have high demand for fish and offer the largest market for fish and fisheries product in Africa which can be exploited through capture fisheries or culture fishery also known as aquaculture (Olaoye and Oloruntoba, 2011). Aquaculture has prospects in alleviating under-nutrition and poverty. As a matter of fact, aquaculture sub-sector provides employment opportunities for young and old people due to the low capital outlay required to take-off. By supplying an increasing amount of fish on the world market, the aquaculture sector has not simply increased the availability of fish; it has also prevented prices from rising as they would have if only wild fisheries were to meet the general increase in demand (World Bank, 2013; Troell *et al*., 2014). Aquaculture also serves as a source of foreign exchange while also serving as a viable alternative remedy to the already depleted capture fisheries. It can be operated on a small scale, utilizing family labour or at medium and high cost under intensive operation. This provides opportunities for both the poor and the rich to improve their standards of living through incomes generated from fishery production. 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 (Nwankwo, 2005). To meet the local demand, government imports fish worth of ₦97 billion annually (Adekunle, 2013). This indicates the large deficit in fish supply in Nigeria.

The inability of production to meet demand can be attributed to a number of constraints which include inadequate capital, high cost of feed and inadequate supply of quality fingerlings and lack of awareness (Adefalu *et al.*, 2013). In all, inadequate access to fish farming information and utilization thereof by the largely small-scale aquaculture practitioners appears prominently in the literature as a major setback to the growth and development of aquaculture (Ofuoku *et al.*, 2008; Adefalu *et al.*, 2013). The average fish farmer is therefore ill equipped for successful and sustainable fish production (Adereti *et al.*, 2006). Information and knowledge constitute the basic drivers of development and economic growth in a poor society (Bhisham *et al.*, 2011). Topical findings are that information utilization plays an important role in boosting economic growth and reduction of poverty (Ofuoku, *et al.*, 2008). Information is a not magical cure for poverty itself; it could be only when it is used in the proper way and at the right time. Many fish farmers remain largely poor because they have not accessed and actively utilized modern technologies, therefore innovations bypass them (Swiss Agency for Development and Cooperation (SDC), 2004). Ofuoku, Emah and Itedjere (2008) observed that fish farmers in Central Agricultural Zone of Delta State were actually willing to access aquaculture information but were greatly constrained by inadequate extension contact, ineffective communication, distance from other farmers and illiteracy. According to the authors, communication is ineffective because most of the time, farmers find it difficult to comprehend information they get through an intermediary. Information disseminated by an intermediary among the fish farmers is always characterized by noise. Some farmers are disadvantaged by distance from others and find themselves in such a situation which makes it difficult for them to have easy access to information. Owing to illiteracy, some of the farmers cannot read and only understand the local language. Also, extension contact is poor because the ratio of extension agents to farmers is far from adequate, (Ofuoku *et al.*, 2008).

Aphunu and Atoma (2011) further found that lack of government enabling policy was one of the main pressing constraints against effective utilization of fish farming information sources in Isoko Agricultural Zone of Delta State. They also discovered that maintenance problems, low scale of fish production and rural poverty seriously constrained fish farmers from accessing improved aquaculture information. Nkwocha *et al.* (2009) stated that government's low level of assistance to ICTs infrastructural provision and absence of any policy to encourage farmers gain ICT education pose threat to aquaculture development. As observed by Akpabio and Inyang (2006), the Akwa Ibom State government, in recognition of the enormous potential of the fishery subsector, had put in place some strategies to revitalize the aquaculture subsector, including the provision of hatcheries and growing centers at three locations, with infrastructure facilities for fish preservation, processing, storage and marketing. The government had also provided loans at low interest rates to fishermen and had put in place tax relief for investors. A recent review of the Akwa Ibom State Aquaculture Status Report (2017) revealed that fish farms in the State were still operating either at sub-optimal levels or were virtually abandoned inspite of the bold moves taken by the state government. This could be attributed to a lot of factors including their lack of awareness of available innovations in fish farming which was found as one of the major constraints to aquaculture productivity in the state (Akpabio and Inyang, 2006). What could be responsible for the lack of awareness of available innovations in fish farming amongst the fish farmers? Are there certain constraints militating against the access and subsequent utilization of aquaculture information amongst the fish farmers in Akwa Ibom State? This study was therefore designed to examine the threats to the use of available aquaculture information sources by fish farmers in Akwa Ibom State.

METHODOLOGY

Akwa Ibom state currently covers a total land area of 7,249 square kilometers. It is the 10th largest States in Nigeria in terms of landmass. About 13.4% of the 960km of Nigeria's Atlantic Ocean coastline runs through Akwa Ibom State. Akwa Ibom State houses various ethnic nationalities, but with identical customs, beliefs and culture, with 31 local government areas. The state has six agricultural zones. Agriculture is the most dominant economic activity in the state with crop framing and fish farming activities accounting for about 80% of all forms of agricultural activities (MEP, 2008). The state is rich in petroleum and gas resources, and at present produce the biggest proportion of crude petroleum and gas in Nigeria. Survey research design was adopted for the study. The target population of this study composed of fish farmers in Akwa Ibom State, Nigeria. The Akwa Ibom State Department of Fisheries: aquaculture unit survey framework was used to draw samples for the

study. A list of registered fish farmers in Akwa Ibom State was obtained from Akwa Ibom State Department of Fisheries: Aquaculture unit. This list served as the sampling frame. The fish farmers were clustered into the three senatorial districts of the state. The researchers thereafter carried out a reconnaissance survey for familiarity with the fish farmers. Simple random sampling was then used to select seventy (70) fish farmers from each senatorial district. Two hundred and ten (210) fish farmers were randomly sampled for the study. Constraints to Utilization of Fish Farming Information Sources Questionnaires (CUFFISQ), designed by the researchers were used to elicit information from the respondents. The questionnaire was subjected to face and content validity and revision made based on feedback. Thereafter, the instrument was pre-tested through a pilot study using two communities and forty respondents to determine ambiguous statements beyond the reasoning level of the respondents. These communities and respondents were not involved in the final study. Descriptive statistical tools such as frequency, percentages, means and incidence index were used to analyze the data.

RESULTS

A. Socioeconomic Profile of the Fish Farmers

Table 1 indicates the socio-economic characteristics of the respondents. The table reveals that 85.7% of the fish farmers were males while 19.0 percent were females. This shows that the males were more than female fish farmers which affected the type and quality of work carried by individuals. This results conform with the earlier studies of Okwu and Acheneje (2011), Olukosi and Erhabor, (2008) and Olukunle (2004), who noted that the dominance of males in fish farming enterprise conforms to the fact that fish farming, is highly laborious and technically demanding thus, attracted to more male than female farmers. From table 1, it can be observed that majority (44.8%) of the fish farmers falls within the age bracket of 25-40 years, followed by respondents within age 41-60 years with 31.4%. On the other hand, only a handful (4.8%) of the respondents belongs to the age bracket of less than 25 years. This is in agreement with the observation of Banjo *et al.* (2009) who stated that the highest population of 25-40years signifies the productive age which portends better future for fish production. From the above table, the result suggests that the fish farmers' falls within the economically active age (below 60years). With the current high rate of unemployment in the country, most young people have been reported to resort into fish farming. A typical African traditional agricultural production setting posits that the amount of family labour available is usually closely related to the marital status of the farmer. The Table 1shows that majority (57.1%) of the respondents were married. This suggests that the married farmers in the sampled area might have a reasonable family size providing more family labour compared to those with different marital status. A farmers' level of education is expected to influence his innovativeness and ability to make decisions on various aspects of farming. Education is therefore highly important for sustainable aquaculture growth and development. As shown on Table 1, a greater percentage of the fish farmers (42.8%) had up to secondary education. This implies that the respondents are not likely to have much difficulty in understanding and adopting modern aquaculture technologies and innovation. Farming experience generally correlates with acquisition of improved skills in agricultural production. The result of this study shows that majority (50.9%) of the respondents had fish farming experience ranging from between 3 and 10 years while the average years of experience was 50. 9 %. This indicates that the farmers have reasonable years of fish farming experience that should facilitate their acquisition of some good skills in fish production.

Table 1: Socio-Economic Characteristics Distribution of the Fish Farmers

	Socioeconomic Characteristics	Frequency	Percentages
1	**Sex**		
	Male	180	85.7
	Female	30	14.3
2	**Age**		
	Less than 25	10	4.8
	25-40	94	44.8
	41-60	66	31.4
	60 and above	40	19.0
3	**Marital Status**		
	Married	120	57.1

	Single	65	30.9
	Divorced	15	7.1
	Widowed	10	4.8
4	**Educational Level**		
	No formal education	4	1.9
	Primary	60	28.6
	Secondary	90	42.8
	College/University	56	26.7
5	**Primary Occupation**		
	Fishing/fish farming	200	95.2
	Others	10	4.8
6	**Years of Farming Experience**		
	Less 3 years	25	11.9
	3-10	107	50.9
	11-20	70	33.3
	Greater than 20	8	3.8
7	**Household size**		
	Less than 2	17	8.1
	2-5	76	36.2
	6-10	102	48.6
	Greater than 10	15	7.1

B. Constraints to the Use available Sources of Information Among the Fish Farmers

Table 2 shows constraints to the use of available sources of information, nineteen constraints to effective utilization of available sources of information amongst the respondents were identified. Response analyses on Table 2 shows the ratio index indicating the degree of severity of the constraints. The severity increases if the index value approaches 1 and becomes less or not serious if the value approaches 0. The results across all the constraints portrayed that only 3 out of 19 constraints had above 0.50 incidences having influence on the utilization of available sources of information by the respondents as shown on the incidence column.

Lack of incentives was reported by 85.7% of the respondents as a key constraint to utilization of fish farming information sources. This was followed by lack of money to acquire information sources reported by 75.4% of the respondents and then high cost of adoption (52.8%) was reported by the respondents. Lack of interest (0.161), low technical know-how (0.124) and Illiteracy (0.075) were reported by less than 2% of the respondents, hence, they were regarded as the least constraints faced by the respondents. With a critical review of table 2, one can easily deduce that the sub-optimal level of fish farming or aquaculture operation observed in the study area may be attributed to fish farmers' lack of information on innovative fish farming techniques. The lack of information is fueled majorly by farmers not having incentives to use the information sources; they lack the financial resources to acquire the information sources due the high cost of adopting the available sources. Other constraints reported included; Lack of training centers (0.476), Insufficient contacts with extension agents (0.428), Lack of internet service (0.381), High cost of telecommunication services (0.295), unavailability of information sources (0.162), lack of interest of the farmers (0.161) and illiteracy (0.075).

Table 2: Constraints Faced by Fish Farmers in Utilizing Available Sources of Information in the Study Area

Item	Constraints to the Use of Information	Very serious	Serious	Not serious	Not a problem	Pooled incidence index/ Rank
1	Lack of incentives	140(66.7)	40(19.0)	20(9.5)	10(4.8)	[a](0.857)[1st]
2	Lack of money to acquire information source	68(32.4)	92(43.0)	50(23.8)	0(0)	[a](0.754)[2nd]
3	High cost of adoption	21(10.0)	90(42.8)	65(30.8)	34(16.2)	[a](0.528)[3rd]
4	Lack of training centers	30(14.3)	70(33.3)	60(28.6)	50(23.8)	[b](0.476)[4th]

5	Insufficient contacts with extension agents	40(19.0)	50(23.8)	70(33.3)	50(23.8)	$^{b}(0.428)^{5th}$
6	Lack of internet service	10(4.8)	50(23.8)	120(57.1)	30(14.3)	$^{b}(0.381)^{6th}$
7	High cost of telecommunication services	11(5.2)	51(24.3)	126(60.0)	22(10.5)	$^{b}(0.295)^{7th}$
8	Negative attitude of people towards change	20(9.5)	38(18.0)	140(66.6)	12(5.7)	$^{b}(0.275)^{8th}$
9	Inadequate access to ICTs	14(6.7)	39(18.6)	153(72.9)	4(1.9)	$^{b}(0.253)^{9th}$
10	Complexity of understanding	19(9.0)	29(13.8)	138(65.7)	24(11.4)	$^{b}(0.228)^{10th}$
11	Lack of access to information sources	15(7.1)	32(15.2)	153(72.9)	10(4.8)	$^{b}(0.223)^{11th}$
12	Problem of gender bias on the use of information sources	17(8.1)	28(13.3)	127(60.5)	38(18.1)	$^{b}(0.214)^{12th}$
13	Lack of time to listen to agricultural programmes	10(4.8)	30(14.3)	150(71.4)	20(9.5)	$^{c}(0.191)^{13th}$
14	Language barrier	12(5.7)	26(12.4)	129(61.4)	46(21.9)	$^{c}(0.181)^{14th}$
15	Lack of information	11(5.2)	25(11.9)	112(53.3)	62(29.5)	$^{c}(0.171)^{15th}$
16	Unavailability of information sources	12(5.7)	22(10.5)	156(74.3)	20(9.5)	$^{c}(0.162)^{16th}$
17	Lack of interest	0(0.0)	34(16.1)	90(42.9)	86(40.9)	$^{c}(0.161)^{17th}$
18	Low technical know- how	6(2.9)	20(9.5)	130(61.9)	54(25.7)	$^{c}(0.124)^{18th}$
19	Illiteracy	2(0.9)	14(6.6)	50(23.8)	150(71.4)	$^{c}(0.075)^{19th}$

Rating scale: very serious =3, serious=2, not serious=1, not a problem =0. **Note:** Numbers in parenthesis represents percentages while those outside represents frequencies.

C. Incidence Index Analysis and Implication of the Constraints to Utilization of Fish Farming Sources

For ease of explanation and meaningful discussions, pooled incidence of constraints to utilization of fish farming information sources is presented on Table 3 below. The pooled incidences were categorized into ranges. Constraints of same range were indicated with alphabetical superscript (see table 2). From table 3, it can be seen that three constraints fell under the 'a' category and made up 15.8% of the total constraints experienced by the respondents. Constraints in category 'a' were regarded as very severe constraints since they were constraints reported by 50 to 100% of the respondents (incidence range = 0.50 – 1.00). This stressed the areas that need immediate intervention. Category 'b' has 9 constraints which made up 47.4% of the total constraints experienced by the respondents. Category 'b' constraints were regarded as just 'severe' since they were constraints reported by 20 – 49.9% (incidence range = 0.20 – 0.499) of the respondents. Category 'c' has 7 constraints making up 36.8% of the total constraints. Category 'c' constraints were regarded as 'not severe' since constraints in this category were reported by very minute (less than 2%) number of the respondents.

Table 3 Showing Incidence Index Analysis and Implication of the Constraints to Utilization of Fish Farming Sources

Incidence Index category	Incidence Index range	Constraint Frequency	Percentage (%)composition	Implication
'a'	0.50 – 1.00	3	15.8	Very severe
'b'	0.20 – 0.499	9	47.4	Severe
'c'	0.00 – 0.199	7	36.8	Not sere
Total		**19**	**100**	

DISCUSSION OF FINDINGS

Results across all the constraints portrayed that 3 identified constraints (3 out of 19) had above 0.50 incidences having influence on the utilization of available sources of information by the respondents as shown on the incidence column on Table 3. By implication, fish farmers in the study areas, in their effort to utilize information sources, were constrained by lack of incentives, lack of training

centers, and lack of money to acquire information source. In addition, insufficient contacts with extension agents, and high cost of telecommunication services also constituted constraints to utilization of information sources. The findings agrees with Tologbonse *et al.* (2008) who found that challenges facing farmers in accessing agricultural information were outdated information, language barrier, lack of awareness on existence of different information sources, lack of funds to acquire information and poor format of information carrier. Findings in this study also agrees with Ofuoku *et al.*, (2008) who observed that fish farmers in Central Agricultural Zone of Delta State were actually willing to access aquaculture information but were greatly constrained by inadequate extension contact, ineffective communication, distance from other farmers and illiteracy.

CONCLUSION

The study has discovered major constraints which include; lack of incentives, lack of training centers, lack of money to acquire information sources, inadequate access to ICTs and insufficient contact with the extension agents amongst others militating against the effective utilization of the available source by respondents to boost production. Based on the findings of this study, adequate training centers, access to ICTs centers and increase in extension agent ratio should be put in place to ameliorate the severity of the constraints faced by the respondents in utilizing the available sources of information in the study area. Social infrastructure such as electricity should be provided in the study area to aid timely access to information since most of the sources utilized by the respondents depend on electricity for their functionality. Credit facilities should be made available to fish farmers particularly the poor who need money for the expansion of their business farming activities or to acquire information resources. There should be provision of good roads, marketing channels and reliable transport to enable fish farmer dispose their products easily.

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