UNIVERSITY OF UYO

FACULTY OF AGRICULTURE

Presents

A SPECIALISED COMPENDIUM ON

SUSTAINABLE AGRICULTURE IN A DIVERSIFIED ECONOMY:

NIGERIA IN PERSPECTIVE

EDITORS

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CHAPTER 37

AQUACULTURE INFORMATION SOURCES, RELATIVE INCIDENCES OF ACCESSIBILITY AND PREFERENCES AMONG FISH FARMERS IN AKWA IBOM STATE

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ABSTRACT

This study investigated the aquaculture information sources, relative incidences of accessibility and preferences among fish farmers inAkwa Ibom State. It identified the socio-economic characteristics of respondents, identified the sources of agricultural information available in the study area, and mapped the incidence of preference and accessibility of the various sources. The study will guide extension services in the design of fish farming messages (information) for better understanding and efficient utilization by the fish farmers. It was a survey research that employed two-stage sampling technique in the selection of respondents. Questionnaire with reliability index of 0.84 was administered on

The utilization of information on fish farming technologies among farmers ought to translate to efficiency in fish production but it is not always the case210 fish farmers who have registered with Akwa Ibom State Department of Fisheries: aquaculture unit. Collected data were analysed through the use of descriptive statistics (frequencies, percentages, means and incidence index). Findings revealed that the dominant age bracket constituted 72.38%of the sampled population and were within the age of 25-40 years old. About 81.1% of the respondents were male and 19.0% of the respondents were female. 21.42% attended higher institution and 57.14% acquired SSC. The respondents identified co-farmers, mobile phones, television and radio as the major available sources of information. Mobile phones and television with incidence indexes of 0.961 and 0.952 were the most preferred sources of information utilized by the fish farmers in the study area, followed by extension agents (0.856), internet (0.795) and co farmers (0.756). Social infrastructure such as uninterrupted electricity should be provided in the study area to aid timely access to information since most of the sources preferred by the respondents depend on electricity for their functionality.

Keywords: *Aquaculture, Information sources, Preference, Availability, Fish Farmers, Akwa Ibom.*

INTRODUCTION

Fishes are important renewable natural resources in Nigeria that have always been exploited for both subsistence and commercial purposes from lakes, rivers, and wetlands (Balogun, 2015). In Nigeria, the Fisheries Sector provides high quality food, income and employment opportunities, and supports livelihoods in fisheries dependent households. In 2016, Agriculture, Forestry and Fisheries claimed 20.24% of the GDP share in the Nigerian economy, in which the fisheries sector independently contributed 4.47% of national GDP. As a result of this, Nigeria is considered not only an agricultural country but also country of Fisheries (Faturoti, 2013).

Furthermore, estimated demand of 4.79 Mt for fish in Nigeria was higher than estimated supply of 1.123 Mt in 2015 (Karim et al., 2010). On the other hand, Aquaculture dominates the production of fish because of different manmade disturbances in the natural sources of fish.

As the world population is increasing, the demand for protein and other food items have also continued to increase, especially their nutritional advantages. This calls for improved farming technologies and other information needed for increased production level. Human race has continued to depend on information for effective and adequate agricultural production. There is need for trends of regular reassessments of the sources in which information are disseminated to the end-users to build confidence and enable producers optimize efficiency in agricultural production. Institutions or individuals can constitute information sources that create or bring about a message (Statrasts, 2014). A good information source should be relevant, timely, accurate, cost effective, reliable, usable, exhaustive and aggregated (Statrasts, 2014). Information utilization in fishery sub-sector to a large extent enhances fish farming productivity, especially if timely information is provided on market trends and best production practices. Timely access to market information helps the fish farmers to make correct decisions about what fish to produce and where to sell their products and buy inputs (Bachhav, 2012). Information sources help to guide extension and other agricultural programs to better target specific groups of farmers (Babu, Singh and Gothandam2012). Imagine the world without information; life would have been so clueless and meaningless. It is an element of man's cycle such that there is no life in modern society without information (Idiegbeyan-osejerome and Theresa, 2009). Information helps fish farmers to make critical and rational decisions regarding production, marketing, management and cope with every day difficulties, avoid agricultural risk and to understand their opportunities for investment.

Aina (2017) opined that farmers would benefit from global information if information centers are cited in rural areas with all the information and communication gadgets. Mapatara (2012) revealed that, fish farmers need information to know the various techniques for improving and increasing productivity in fish farming, for instance, information on the stocking operation, water quality management, feed operation, access to agricultural credit facilities, and good marketing of their fish produce. Mgbada, (2016) also described that access to sufficient information is very vital to increased productivity in fish farming. Kamba (2009) and Lesaoana-Tshabalala (2011) are of the view that information has the power to address various needs for small scale fish farmers and if used appropriately, it could improve a nation's economy.

Nevertheless, Boz and Ozcatalbas (2010) in Turkey found that, family members, neighbor farmers, extension services, input providers and mass media were the main sources of information used by farmers to accessed agricultural information. Furthermore, the study by Okunade (2017) found that the key sources of information used by fish farmers in accessing agricultural information were result demonstration, general meetings, group discussion, lectures, television, radio, cinema, leaflets, bulletins, letters, and circulars. Bachhav (2012) also found that the major sources of information among Indian farmers were colleague farmers, newspapers and government offices. The study conducted by Benard and Dulle (2014) in Tanzania revealed that the major sources of information used by fish

farmers in accessing fish production information were family/parents, personal experience, radio, neighbour and or friends and agricultural extension officers.

Miah, Sarker, Dev, and Kabita (2016) found that; neighbor, television, experienced farmers, radio, input dealer, newspaper, local extension agent and farm laborer were the major sources preferred by the majority of the fish farmers for getting information. While farm publications followed by NGO worker and Upazila Fisheries Officer were least preferred by the farmers as information sources in Bangladesh. They gave competency of information sources; adequacy, timeliness, personal judgment, material incentive from the source and most importantly credibility of the source (safety, dynamisms, qualification etc.) as the main reasons for such preferences. Therefore, preferred information sources can be conceptualized as a system of information flow by which new ideas or innovation are released from a source through a medium to a receiver with the sole aim of changing his/her skill and behaviour.

However, it has also been observed that fish farmers in the rural regions of Akwa Ibom State in Nigeria are most times skeptical of modern agricultural practices especially ideas from researchers and extension officers, (Inyang and Solomon, 2007). Most of them do not understand the principles of modern fish farming and have little interest in accepting information on these principles (Okunade 2017). Fish farmers in Akwa Ibom State are still in the subsistence class. Their produce is barely for the family. Subsistence fish farming is characterized by limited capital resources, use of earthen and small ponds, low labour use and low income (Akpabio and Inyang, 2007). These characteristics tend to perpetuate the existing situation where fish products are barely enough for survival and cannot make a substantial contribution to economic growth in terms of food security within the region, (Olawepo, 2010). The individual farmers are likely to be comparatively powerless against market forces and unable to obtain economies of scale by their effort. All over the state, the small family fish farms with little output dominate fish farming business. Most of these farmers are near or even below the economic viability.

Farmers in Akwa Ibom State region seems to be trapped in this vicious poverty cycle due to their low output, they seems unable to make the necessary investments and expansion due to lack adequate access to information on diverse resources. The consequence of this is that they are unable to focus primarily on fish farming as the only means to improve their living standard. To break out of poverty, these farmers need strong and reliable information to boost their production. But the extent to which fish farmers in the Akwa Ibom State have used information sources to access modern fish production techniques is yet to be evaluated, hence the need for this research. Specifically, this paper mapped the socio-economic characteristics of respondents, identified the sources of agricultural information available to respondents and identified the preferred sources of information utilized by the respondents

METHODOLOGY

Akwa Ibom state currently covers a total landarea of 7,249 square kilometers. The area doesnot take into consideration disputed territories. Itis the 10 largest States in Nigeria in terms oflandmass. About 13.4% of the 960km ofNigeria's Atlantic Ocean coastline runs throughAkwa 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 with all the fish farmers in Akwa Ibom State as the target population was adopted. 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 Statewas 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 researchersthereafter 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 random sampled for the study.

Preferred Sources of Information Questionnaire (PSIQ), designed by the researcher was 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 trial tested through a pilot study using two communities and forty respondents. These communities and respondents were not involved in the final study. The questionnaire had four sections. Section A extracted information on the socio-economic characteristics of the farmers such as sex, age, educational level and years of farming experience. Section B was a list of information sources in a 2-point scale which elicited information from the respondents regarding the information sources accessibility in the study area. Section C was a rating scale which elicited information from the respondents regarding their preferred information sources. It was a 3-point rating scale with Cronbach alpha coefficient of 0.84. Descriptive statistical tools were used to analyze the data.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

Sex of the Respondents

Results on item 1 revealed that 81.1% of the respondents were males while 19.0 percent were females. This result agrees with the findings of Ofuoku *et al* (2008), Salau (2014), Idrisa, Sulumbe, and Mohammed, (2007) who found that men were more involved in fish farming. This may have been attributed to the fact that fish farming in general is a bit tedious and requires energy.

Age of the Respondents

Results reveal that majority (72.38%) of the fish farmers were within the age bracket of 25-40 years, 18.57% were within 41-60 years, 4.28% of the respondents were less than 25 years of age while only 14% of the respondents were 60years and above. This result portrays that the respondents were relatively young. This category of fish farmers ought to be active, inquisitive, productive and willing to acquire information on appropriate farming skills in order to contribute meaningfully to improved fish farming practices and by extension, development of the society. William *et al* (2015) classified this age (age bracket of 25-40 years) as the age with strength and physical ability expected to put into the management for high productivity. William *et al* (2015) posited that fish farmers in their young, active ages would be smarter than the older ones.

Level of Education of the Respondents

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Level of Education of the Respondents

Item 3 on Table1 also showed that 14.28% of the respondents acquired primary education, 21.42% acquired College/University education, 57.14% acquired secondary education and only 7.14% had no formal education. By implication, majority of the respondents were literate having attended one level of education or the other. This is advantageous with regards to utilization of information sources on fish farming business. These corroborates Fadiji, Adeogun and Kahinde, (2015) who found that fish farmers are highly educated and are imbued with ability to access and appreciate the use of improved technology and best practices in their enterprises. As observed by Emaikwu, Chikwendu and Sani, (2011), education is not only an important determinant of adoption of an innovation but also a necessary tool for successful implementation of innovation for profitability.

Years of Farming Experience

Item 4 on Table 1 reveals that Majority (69.04%) of the respondents had between 3-10 years of fish farming experience, about 16.19% had less than 3 years of experience, 11.90% had between 11-20 years while 2.55% had above 20 years of fish farming experience. This implies that that majority of fish farmers had good experience in fishing and fish farming business. Oniah, Tiku and Agbobo (2008), in their study, reviewed that farmer's years of experience, educational level and sex had a direct and significant effect on the rice enterprises technical inefficiency.

Sources of Agricultural Information Available to the Respondents

Results on Table 2 revealed that all the sources of information identified were available to the respondents. About 95.7% of the respondents attested to availability of co-farmers as their source of information. 90.0% of them attested to the fact that mobile phones were their major available source of information while 70.4% and 74.3% identified both television and radio as their available sources of information respectively. Other major available sources of information identified by the respondents were internet (66.7%), friends (65.7%), farm input distributors (65.2%) and extension agent (64.8%). Fish farmers association and posters (21.4%) each were considered the least available sources of information which were attributed to posters not giving them enough detailed information and lack of interest in joining the fish farmers association. However, results have revealed that all the sources of information identified were available to the respondents. Boz and Ozcatalbas (2010) had also found in Turkey that, family members, neighbor farmers, extension services, input providers and mass media were the main sources of information available to fish farmer.

Incidences of Preference and Accessibility of Information Sources Utilized by the Respondents

Preference according to Cambridge dictionary is the view that one person, object or course of action is more desirable than another. The concept was applied to this study in order to understand which of the available information sources as listed on table 2 above were mostly used by the respondents. The inference drawn from here is that, preference of a particular information source would mean that the fish farmers can access and utilize such an information source. The incidence index was used to map the patterns and degree of preference as well as accessibility of the various information sources by the fish farmers. The incidence index is ranged from 0.0 to 1.0. An incidence index of a particular information source closer to one connotes that the respondents to large extent preferred, accessed

and utilized such information source and vice versa if an index is closer to zero.

Three-point likert-scale of most preferred, preferred and not preferred, with a cut-off point of 1.0 was employed to elicit the information from the respondents. Result on table 3 below is quite revealing. Mobile phones and television with incidence indexes of 0.961 and 0.952 respectively were the most preferred sources of information utilized by fish farmers in the study area, followed by extension agents (0.856), internet (0.795) and co farmers (0.756). It goes on in the order as indicated by the superscripts (See Table 3). This pattern of preference may not be unconnected with the fact that majority of the fish farmers were young school leavers full of passion and the know-how to acquire and use smart kind of phones now trending in the study area. They have the passion to spend time following and watching innovative television programmes concerning fish farming.

This finding corroborates Miah, Sarker, Dev, and Kabita, (2016) who also found that young literate fish farmers in Bangladesh mostly preferred television, experienced farmers, radio etc. as their major sources of information. Sources of information with a mean values and incidence index less than 1.0 and 0.5 respectively were considered not preferred hence not utilized by the farmers indicating that majority of the sources were not preferred by the fish farmers (See Table 3). Agricultural information sourcing undoubtedly creates knowledge, understanding and values as well as positive attitude, skills and abilities among farmers towards farming activities for improved agricultural productivity. Agricultural experts have repeatedly pointed out that solution to fish production problems will require awareness and proper understanding of fish production techniques. Hence, rural farmers really need to seek information about fish production and how best to respond to innovations in fishing/fish production strategies.

Table 1: Socio-Economic Characteristics Distributionof the Respondents

Socioeconomic Characteristics	Frequency	Percentages
Sex		
Male	170	81.0
Female	40	19.0
Age		
Less than 25	9	4.28
25-40	152	72.38
41-60	39	18.57
60 and above	30	14.28
Educational Level		
Primary	30	14.28
Secondary	120	57.14
College/University	45	21.42
No formal education	15	7.14
Years of Farming Experience		
Less 3 years	34	16.19
3-10	145	69.04
11-20	25	11.90
Greater than 20	6	2.85

Source: Survey field, 2017

Table 2: Distribution of Respondents based on Available Sources of Information

Sources of Information	Available	Not Available
Co-farmers	201(95.7)	9(4.3)
Mobile Phone	189(90.0)	21(10. 0)
Television	148(70.4)	62(29.5)
Radio	156(74.3)	54(25.7)
Internet	140(66.7)	70(33.3)
Friends	138(65.7)	72(34.3)
Farm input distributors	137(65.2)	73(34.8)
Extension agents	136(64.8)	74(35.2)
Workshop/seminar	60(28.6)	150(71.4)
Videos	40(19.0)	170(80.9)
Family	62(29.5)	142(67.6)
Newspapers	26(12.4)	184(87.6)
Magazines	36(17.1)	174(82.9)
Fish farmers association	45(21.4)	165(78.6)
Posters	45(21.4)	165(78.6)

Note: Numbers in parenthesis represents percentages while those outside represents frequencies N=210

and utilized such information source and vice versa if an index is closer to zero.

Three-point likert-scale of most preferred, preferred and not preferred, with a cut-off point of 1.0 was employed to elicit the information from the respondents. Result on table 3 below is quite revealing. Mobile phones and television with incidence indexes of 0.961 and 0.952 respectively were the most preferred sources of information utilized by fish farmers in the study area, followed by extension agents (0.856), internet (0.795) and co farmers (0.756). It goes on in the order as indicated by the superscripts (See Table 3). This pattern of preference may not be unconnected with the fact that majority of the fish farmers were young school leavers full of passion and the know-how to acquire and use smart kind of phones now trending in the study area. They have the passion to spend time following and watching innovative television programmes concerning fish farming.

This finding corroborates Miah, Sarker, Dev, and Kabita, (2016) who also found that young literate fish farmers in Bangladesh mostly preferred television, experienced farmers, radio etc. as their major sources of information. Sources of information with a mean values and incidence index less than 1.0 and 0.5 respectively were considered not preferred hence not utilized by the farmers indicating that majority of the sources were not preferred by the fish farmers (See Table 3). Agricultural information sourcing undoubtedly creates knowledge, understanding and values as well as positive attitude, skills and abilities among farmers towards farming activities for improved agricultural productivity. Agricultural experts have repeatedly pointed out that solution to fish production problems will require awareness and proper understanding of fish production techniques. Hence, rural farmers really need to seek information about fish production and how best to respond to innovations in fishing/fish production strategies.

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Source: Survey field, 2017

Table 2: Distribution of Respondents based on Available Sources of Information

Sources of Information	Available	Not Available
Co-farmers	201(95.7)	9(4.3)
Mobile Phone	189(90.0)	21(10. 0)
Television	148(70.4)	62(29.5)
Radio	156(74.3)	54(25.7)
Internet	140(66.7)	70(33.3)
Friends	138(65.7)	72(34.3)
Farm input distributors	137(65.2)	73(34.8)
Extension agents	136(64.8)	74(35.2)
Workshop/seminar	60(28.6)	150(71.4)
Videos	40(19.0)	170(80.9)
Family	62(29.5)	142(67.6)
Newspapers	26(12.4)	184(87.6)
Magazines	36(17.1)	174(82.9)
Fish farmers association	45(21.4)	165(78.6)
Posters	45(21.4)	165(78.6)

Note: Numbers in parenthesis represents percentages while those outside represents frequencies N=210

Table 3: Distribution of Respondents Based on Preferred Source of Information Utilized.

Sources of Information	Most preferred	Preferred	Not preferred	Incidence index
Mobile phones	142(67.6)	60(28.5)	8(3.8)	0.961[1st]
Television	130(61.9)	70(33.3)	10(4.8)	0.952[2nd]
Extension agents	100(47.6)	80(38.0)	30(14.3)	0.856[3rd]
Internet	95(45.2)	72(34.3)	43(20.5)	0.795[4th]
Co-farmers	80(38.0)	79(37.6)	51(24.3)	0.756[5th]
Radio	68(32.4)	56(26.7)	86(40.9)	0.591[6th]
Farm input distributors	43(20.5)	34(16.2)	133(63.3)	0.367[7th]
Workshop/seminar	40(19.0)	34(16.2)	136(64.8)	0.352[8th]
Videos	26(12.4)	46(21.9)	138(65.7)	0.343[9th]
Friends	12(5.7)	57(27.1)	141(67.1)	0.328[10th]
Family	9(4.3)	39(18.6)	162(77.1)	0.229[11th]
Posters	9(4.3)	39(18.6)	162(77.1)	0.229[12th]
Magazines	10(4.8)	27(12.9)	173(82.4)	0.177[13th]
Newspapers	10(4.8)	27(12.9)	173(82.4)	0.177[14th]

Note: Numbers in parenthesis represents percentages while those outside represents frequencies, N=210

CONCLUSION

The study has shown that information sources are available to fish farmers in Akwa Ibom State of Nigeria. The study also revealed that the major sources of information preferred by the respondents were mobile phones, television, extension agent, Internet, co farmers and radio.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 preferred by the respondents depend on electricity for their functionality. More innovative fish farming television programmes should also be promoted in the study area.

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