

GENDER AND AQUACULTURE INFORMATION PREFERRED SOURCES AMONG RURAL FISH FARMERS IN ONDO STATE, NIGERIA

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ABSTRACT

The need to utilize appropriate aquaculture information technologies by rural fish farmers for increased supply of protein intake in developing countries like Nigeria has great gender implication. This study therefore, examined rural fish farmers' gender and aquaculture technology sources in Ondo State, Nigeria. A multi stage sampling technique was used to select 166 rural fish farmers from the two Agricultural Development Programme (ADP) Zones. Interview schedule and questionnaire were employed in data collection. Data were analyzed using frequency counts, percentages and Chi – square. Results show that most rural fish farmers are male (63.3%), aquaculture information technology preferred sources were higher among male fish farmers which include friends 70.9%, extension agents 78.6%, contact farmers 59.8% and radio farm broadcast 54.7%. Significant relationship were established between gender and radio farm broadcast ($\chi^2 = 0.04$, $p < 0.05$), television farm broadcast ($\chi^2 = 0.03$, $p < 0.05$), contact fish farmers ($\chi^2 = 0.03$, $p < 0.05$), extension bulletin ($\chi^2 = 0.00$, $p < 0.05$), posters and co-operative societies ($\chi^2 = 0.01$, $p < 0.05$). Gender was not significantly related to friends ($\chi^2 = 0.14$, $p > 0.05$) and extension agents ($\chi^2 = 0.47$, $p > 0.05$). The implication of this finding is that gender determines majorly the preferred sources of aquaculture information except for the extension agents and friends. It is recommended that the extension managers should rather intensify the use of extension agents as information technology sources to rural fish farmers since they are not gender specific.

Keywords: Aquaculture, gender, fish farmers, information technology, preferred Sources

INTRODUCTION

Fish farming is the world's fastest growing source of animal food, outpacing terrestrial meat production and the captured fisheries. Fish processing and marketing in Nigeria enjoy wide spread acceptability since no religious or cultural belief place any taboo against it (Adebayo, 2012). Increased production of fish from aquaculture will help combat hunger and malnutrition which remain one of the most devastating problems facing the majority of the poor in the Niger Delta region and the country as a whole. Today, aquaculture provides nearly half of the world's food fish. What's more, aquaculture is perceived as having the greatest potential to meet the growing demand for aquatic food. Aquaculture also significantly contributes to development: it improves incomes, provides employment and increases the returns on resource use. Given the present natural resources and technological advances, aquaculture is going to expand and in a more sustainable way in future, but would only be possible if the benefits of aquaculture are acknowledged around the world. The main challenge facing policy-makers and development agencies is to create an 'enabling environment' for the aquaculture sector. This way aquaculture can continue to grow while meeting peoples' needs and preserving the natural environment," (Nomura, 2007).

To attain its full potential in contributing to human development, food security and improved livelihood, the aquaculture industry may require new approaches. These could vary with countries and the challenge is to develop approaches that are realistic and achievable in the context of current social, economic, environmental and political situations. (Akinrotimi, Abu and Aranyo 2011). Fish farmers thus need information to optimize production. Due to the growing population of fish farmers, different kinds of information are being made available to those interested, particularly on how to start and management of fish farms. All these are to encourage local participation so as to increase rate of production (Akinbile and Alabi, 2010). If local fish production must be boosted, fish farmers must raise their yield using modern techniques of production (Alfred and Fagbenro 2012). Technology is globally recognized as a power key and major ingredient for socio-economic development of any nation. The purpose of technology development is to improve living conditions and in the process generate opportunities for people to make a livelihood and improve their standard of living (Ironkwe *et al*, 2011). ICT has a very positive economic impact in rural areas, creating a substantial consumer surplus, and immeasurable quantity of life enhancements. For instance, the village phone in Bangladesh obviated the need for rural farmers to make a trip to the city to find out the market price of produce, reducing costs, and helping farmers keep in touch with their relatives in the cities (Richardson, Ramirez, and Haq 2000) and (Bayes, Von Braun, and Akhter, 1999). Hence any technology developed is expected to be economically viable, affordable, practicable, feasible and available to all the end users for it to be easily adopted to increase production (Unamma *et al*, 2004).

Information dissemination is an important tool for promoting national development. Information is an essential ingredient in agricultural development programme. In Nigeria, as in many other developing countries, limited number of extension agents (1:4,000 farmers) makes it impossible to reach all farmers by inter-personal means (Mohammed and Olabode, 2007). In many farming populations, access to information is often variable, partly due to differences in farmers' circumstances and ability to adopt technological options and availability of extension communication infrastructure (Shuaibu *et al*, 2011). Information has been identified as one of the resources required for the improvement of agricultural production (Ogunlade, 2007). It is said to be a resource that must be acquired, and used in order to make an informed decision. Those who possess

appropriate and timely information will make a more rational decision than those without (Adesope et al, 2007). In agriculture, the role of information in enhancing agricultural development cannot be over emphasized. Information is vital for increasing production and improving marketing and distribution strategies (Oladele, 2006). Information also opens windows of sharing experiences, best practices, sources of financial aids and new markets, access to information is very essential for increased productivity by fish farmers (Ugboma, 2010). Fish farming technologies needed to be communicated to fish farmers include construction and management, breeds and spawning, processing, storage, marketing and financing (Ofuoku *et al*, 2008). In Nigeria, agricultural information is available through National Agricultural Extension Research Liaison Service (NAERL) and its information services (Ekoja, 2003). Also, they are available in the many agricultural research institutes and school of agriculture in the Universities as well as the Federal and State ministries of agriculture (Adomi, *et al* 2003 and Ugboma, 2007).

Gender describes the socially determined attribute of men and women. It refers to the physical and biological difference between men and women. Gender is a useful socioeconomic variable to analyse roles, responsibilities, constraints, opportunities and incentives of people involved in agriculture (Mafimisebi, 2007). Gender differential is the description in character of being male or female as ascribed by culture and society. The term gender does not only connote sex, it is culturally ascribed as a role performed by either of the sexes. (Ogunniyi, Ajao and Adeleke 2012). The issue of gender is a process by which individuals are born into biological categories of female and male. This could become the social categories of women and men through the acquisition of locally defined attributes of femininity and masculinity (Aina, 2002). Also, in the recent years, the topic gender especially women participating in the development has become prominent in the literature, democracy and governance. This is due to the establishment of Women in Agriculture (WIA) as a component of Agricultural Development programme (ADP) (Ogunniyi *et al*, 2012).

Gender deals with the social relationship between men and women and how these relationships are negotiated in the production of goods and services (Ironkwe, 2011). However, it is important to note that such gender relationship exist among rural fish farmers. Farmers' personal characteristic and socio-economic status, which are determined by gender, constitute critical factors in technology utilization process (Chukwu, 2007). Gender influences knowledge, perceptions and needs of farmers as well as their access to agricultural technologies (Rahman, 2005). It is against this backdrop that this study addressed the following research objectives:

OBJECTIVES OF THE STUDY

The general objective of the study is to determine rural fish farmers' gender and aquaculture information preferred sources in Ondo State, Nigeria

SPECIFIC OBJECTIVES

The specific objectives are to:

1. Identify the socio economic characteristics of the respondents
2. Ascertain rural fish farmers' gender and aquaculture information preferred sources
3. Access reasons for the respondents' gender preferred aquaculture information sources

HYPOTHESIS OF THE STUDY:

1. There is no significant relationship between gender and socio – economic characteristics of fish farmers
2. There is no significant relationship between fish farmers' gender and aquaculture information preferred sources

METHODOLOGY

The study was carried out in Ondo State (Fig.1). Ondo is one of the six states that make up the South West geopolitical zone of Nigeria. It has interstate boundaries with Ekiti and Kogi States to the north, Edo State to the east, Delta State to the southeast, Osun State to the northwest and Ogun State to the southwest. The Gulf of Guinea lies to its south and its capital is Akure. Ondo State covers an area of 15,195.2 square kilometers and lies at latitude 7° 10' north and longitude 5° 05' east. It has a population of 3,460,877 and a population density of 218 people per square kilometer. It accounts for 2.5% of Nigeria's total population. Ondo State is predominantly tropical rainforest with some areas of forest savannah to its north. There are forest and mangrove swamps in the south of the state. Agriculture is very important, with a significant percentage of the state's labour force engaging in farming. Cocoa is the dominant cash crop grown in Ondo.

Multistage and simple random sampling (SRS) technique was used in this study (Abiona *et al*, 2012). The first stage involved selection of one of the Ondo State Agricultural Development Programme (ADP) zones (Zone II), followed by selection of five blocks from the zone. Thereafter, 67% of registered fish farmers were randomly selected from the selected blocks to obtain 166 fish farmers. Questionnaire and scheduled interview were used for data collection.



Fig.1. Map of Ondo State showing the sampled areas

RESULTS AND DISCUSSION

Table 1 indicates that male and female fish farmers in the study area were 63.3% and 33.7% respectively. This implies that fish farming is dominated by male. This revealed that males were involved in fish farming due to the great task and energy required, which women may find hard to cope (Olaoye, 2010). Larger proportions (25.9%) of the male fish farmers were within 40 and 49 years old while females were 13.9%. There was a general trend of decrease in the percentage of both male and female fish farmers as the age increases from 50 years (19.28%, 4.22%) to 60 years and above (8.4%, 0.6%). Lower percentage of young male and female (4.8%) could be in pursuit of education Ugboma (2010).

This result agreed with Nwaru (2004) and Invene *et al* (2011) that the ability of a farmer to take risk and be innovative decreases with age. The result implies that younger male fish farmers dominated fish farming in the study area. The results also showed that 56.01% and 22.3% male and female were married while 4.22% were single male and female respectively. The reason could be because married male and female fish farmers had more financial commitment which made them to result to fish farming which corroborates FAO (2003) and Oyesola (2009) which states that more people, especially the young ones going into fish production, contribute to the fish industry in Nigeria as an important component of the agricultural sector. Majority of the male (23.50%) and female (10.8%) had post secondary education; also there were more (15.7%) male

and (10.8%) female fish farmers that has no formal education. Education is important in determining farmers' ability to understand and manage unfamiliar technology (Doss and Norris, 2001). The implication is that invariably there would be higher understanding of the information technology sources preferred among the males in the study area which corroborate (Onyenweaku and Nwaru, 2005) that acquisition of formal education is supposed to enhance one's ability to understand and evaluate new production techniques. The observable trend among female fish famers in faming experience was that over the years the number decreases (1-4yrs) 13.3%, (5 – 9yrs) 12.1% and 10years above 8.4% where as male fish famers above 10 years farming experience were 23.5%. This implies that more experienced males than the females were in fish farming in the study area. Membership of co-operative/famers association is expected to increase technology utilization this is because the members are assumed to have more access to sources of information and knowledge of new technologies (Ironkwe, 2005, and Onyenweaku and Nweru, 2005). Results indicated that majority (45.2%) male and (22.3%) female belong to fish farmers association compared to (21.1%) male and (11.5%) female that were members of co-operative societies. The implication of farmers group is that it encourages the spread of equitable development and is generally viewed as an avenue for dissemination of improved practices in agriculture to members (Ogunremi 2012).

Table 1: Distribution of Fish Farmers according to Gender and Social Economic Characteristics

	VARIABLES	MALE		FEMALE	
		Freq.	%	Freq.	%
Age range (years)	20 – 29	8	4.8	8	4.8
	30 – 39	20	12.1	10	6.0
	40 – 49	43	25.9	23	13.9
	50 - 59	32	19.28	14	8.4
	60 and above	7	4.22	1	0.6
	Total	166	63.3	56	33.7
Marital status	Married	93	56.0	37	22.3
	Single	7	4.22	7	4.22
	Divorced	7	4.22	3	1.8
	Widowed	3	1.8	9	5.4
	Total	166	63.3	56	33.7
Educational status	No formal education	26	15.7	18	10.8
	Primary	2	14.5	7	4.22
	Secondary	21	12.7	7	4.22
	Post - secondary	3	23.5	24	14.5
	Total	166	63.3	56	33.7
Membership of Association	Fish farmers	75	45.2	37	22.3
	Co-operative	35	21.1	19	11.5
	Total	166	63.3	56	33.7

Preferred aquaculture information technology sources by fish farmers are presented in Table 2. The result revealed that larger proportion 78.6% of the male preferred extension agents as their source of aquaculture information technology, 70.9% source from friends/neighbor or relatives, 59.8% source from contact farmers and the least source from Agricultural Research Institutes 26.5%. The female preferred sources was highest also with extension agents 73.5%, friends/neighbors or relatives 59.2%, contact famers 40.8% while Agricultural Research Institutes were the least form male 26.5% and female 4.1%. The result was an indication of extension agents' role in disseminating aquaculture information technologies to fish farmers.

Table 2: Preferred aquaculture information technology sources by fish farmers

S/N	VARIABLES	GENDER							
		MALE				FEMALE			
		Yes		No		Yes		No	
		Frq.	%	Frq.	%	Frq.	%	Frq.	%
1.	Friends/Neighbors/Relatives	83	70.9	34	29.1	29	59.2	20	40.8
2.	Agricultural Research Institutes	31	26.5	86	73.5	2	73.5	47	95.9
3.	Radio farm broadcast	64	54.7	53	45.3	18	45.3	84	50.6
4.	Extension agents	92	78.6	25	21.4	36	21.4	13	26.5
5.	Co-op society members	52	44.4	65	55.6	11	55.6	38	77.6
6.	Contact farmers	70	59.8	47	40.2	20	40.2	29	59.2
7.	Television farm broadcast	45	38.5	72	61.5	10	61.5	39	79.0
8.	Extension bulletins/Newspaper	42	35.9	75	64.1	6	64.1	43	87.8
9.	Pictures, posters	48	41.0	69	59.0	12	59.0	37	75.5

Results in Table 3 showed that reasons for preferred aquaculture information technology sources by fish farmers on gender basis were high for male than female but followed the same pattern. Thus, Information beneficial 52.4% and 25.3%, information well communicated 42.8% and 21.1% information easily accessible 42.2% and 18.1% high quality of information 41.6% and 15.1% respectively. This implies that both male and female fish famers had similar reasons for their preferred aquaculture information technology sources.

Table 3: Reasons for preferred aquaculture information technology sources by fish farmers

S/N	VARIABLES	GENDER							
		MALE				FEMALE			
		YES		NO		YES		NO	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
1.	Information beneficial	87	52.4	23	13.9	42	25.3	14	8.4
2.	High quality of information	69	41.6	41	34	25	15.1	31	18.7
3.	Information provided on time	48	28.9	62	37.3	22	13.3	34	20.5
4.	Information easily accessible	70	42.2	40	24.1	30	18.1	26	15.7
5.	Information come at convenient time	46	27.7	64	38.6	14	8.4	42	25.3
6.	Information well communicated	71	42.8	39	23.5	35	21.1	21	12.7

The result of Chi-square analysis in Table 4 shows that there is significant relationship between gender and marital status of fish farmers ($\chi^2 = 12.48$, $p < 0.05$). This implies a clear attestation to the fact that marital status is important to the success of fish farming as family members of married male and female are likely to contribute in terms of labour for either the management, harvesting, processing or sale of fish while no significant relationship was recorded between Age ($\chi^2 = 3.77$, $p > 0.05$), educational background ($\chi^2 = 4.23$, $p > 0.05$), membership of association ($\chi^2 = 0.18$, $p > 0.05$) and gender.

Table 4: Chi square analysis of relationship between gender and socio – economic characteristics of fish farmers

S/N	VARIABLE	X ² -VALUE	DF	PF	REMARKS
1.	Age	3.770	4	0.44	NS
2.	Marital status	12.477	3	0.01	S
3.	Educational background	4.230	3	0.24	NS
4.	Membership of Association	0.182	1	0.67	NS

Table 5 shows the Chi square analysis between gender of fish farmers and preferred aquaculture information technology sources. Significant association was found between some preferred aquaculture information technology sources Agricultural Research Institutes $\chi^2 = 0.03$, Radio farm broadcast $\chi^2 = 0.00$, fish farmers association $\chi^2 = 0.03$, contact farmers $\chi^2 = 0.01$, Television farm broadcast $\chi^2 = 0.03$, extension bulletins/Newspaper $\chi^2 = 0.00$ and pictures or posters $\chi^2 = 0.04$ at $p < 0.05$ and gender while there was no significant relationship between friends, neighbors or relatives, extension agent and gender at $p > 0.05$. The trend could be because of the fish famers attached their ties to some of the information technology sources. Findings of Abiona *et al*, (2012) and Ajayi (2005) supported the significant of radio and television as the most popular media source of information.

Table 5: Chi square analysis of relationship between gender and reasons for preferred aquaculture information technology sources by fish farmers

S/NO	VARIABLES	X ² -VALUE	DF	PF	REMARKS
1.	Friends/Neighbors/Relatives	2.18	1	0.14	NS
2.	Agricultural Research Institutes	4.46	1	0.03	S
3.	Radio farm broadcast	10.89	1	0.00	S
4.	Extension agents	0.52	1	0.47	NS
5.	Co-op society members	5.03	1	0.03	S
6.	Contact farmers	7.10	1	0.01	S
7.	Television farm broadcast	5.08	1	0.03	S
8.	Extension bulletins/Newspaper	9.40	1	0.00	S
9.	Pictures, posters	4.09	1	0.04	S

CONCLUSION AND RECOMMENDATIONS

From the study, it could be inferred that gender played a significant role as regards reasons why fish farmers preferred almost all aquaculture information technology sources available to them, also both male and female fish farmers have high preference for Friends/neighbours/relatives as information sources while preference of other sources vary among gender. It could however be concluded that all the available information sources are not well utilized at commensurate level by the gender which in turn may hinder the development of aquaculture for maximum production at a sustainable level.

Based on the findings of the study the following recommendations are suggested.

1. There is need to encourage single male and female to invest into fish farming so as to meet the high demand of protein intake by the populace on a sustainable basis.
2. Attempt should be made to equip the extension agents through incentives and facilities so as to assist the rural fish farmers in promoting fish farming.
3. Aquaculture information technology sources should be more gender sensitive in favour of women so that the level of fish production in the country could be boosted at a sustained level.

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