Fisherfolks' Perception on Artisanal Fishing Enterprise in North Central, Nigeria

John Oluwaseun Ifabiyi [1] , **Rashid Solagberu Adisa** [2]

[1,2]Department of Agricultural Extension and Rural Development, University of Ilorin, Nigeria.

[1]Corresponding author: oluwaseunifabiyi@gmail.com

Abstract

The study identified the fisherfolks' perception of artisanal fishing enterprises in North-Central, Nigeria. Information were collected with the use of questionnaire and analysed using frequency count, percentage, mean score and Pearson Product Moment Correlation (PPMC). The result revealed that 68.4 % of the respondents preferred fishing grounds, about 59.4 % of the respondents preferred group discussion and visit by extension agents and about 61.5 % of the respondents preferred radio. About 38.9 % of the respondents indicated the evening as the preferred time to acquire training. The result showed that 92.8 % of the respondents had knowledge of the basic safety and precaution measure. Fish products should be free of any chemical ($\bar{x}$=4.47) was the highest-ranked perception statement. The result revealed that there is a significant relationship between the respondents' perception of fishing enterprise and knowledge of sustainable fishery practices (r= 0.119; p= 0.001) at 1 percent level of significance. The study recommended that there should be the provision of training in the low knowledge areas on sustainable fishery practices and extension service delivery should be timely.

Introduction

Fish is very crucial to the Nigerian economy, contributing 5.4% of the GDP (Ovie and Raji, 2006). Many people in Nigeria are involved in artisanal fishing activities (FAO, 2007; Raw Materials Research and Development Council, 2007; Al-Jufaili and Opara, 2006). According to World Fish (2022) fish accounts for about 40 percent of the country's protein intake, with fish consumption at 13.3kg/ person/ per year. Fishery enterprise which includes fish farming is an important source of livelihood and food security for many people in Nigeria (Adisa *et al.,* 2021; Ifabiyi *et al.,* 2017). The fish by-products are primarily used in formulation of animal feeds and also for pharmaceutical purpose. The demands for fish products are increasing because of its nutritional and health benefits over meat as its low in cholesterol but however, have high vitamins and minerals contents (Ifabiyi, 2019; FAO, 2012). Nigerians are the largest fish consumers in Africa with about 3.2 million metric tonnes of fish consumed yearly (FAO, 2022; Olaoye and Oloruntoba, 2011). The Nigerian fisheries and aquaculture are among the fastest growing agricultural sub-sectors in Africa (FAO, 2022).

Artisanal fishing involves the use of small-scale and less technology. The artisanal fishing involves the use of crude tools and implements. Artisanal fishing is an important source of livelihoods, food and protein security for many fisherfolks. Onuoha, (2009) stated that artisanal fisheries are labour-intensive and involves low capital outlay.

The resource users' knowledge influences the resources' management (Moura *et al.*, 2013). According to Carr and Heyman, (2012) Artisanal fisherfolks' knowledge has been identified as an important source of social capital.

Fisherfolks' well-being depends on their outputs in fishing activities and this output depends on their knowledge of local fisheries such as the fish diversities, abundances, distribution, ecosystem, fish foods, water depth, fish processing and preservation methods (Neis *et al*., 1999). Sustainable artisanal fishery practices are activities that enhance the fisherfolk's productivity, reduces environmental degradation and provides good quality and hygienic fish products to the final consumers. Sustainable fishery practices protect the ecosystem, use selective methods, reduce post-harvest loss, reduce pollution and contributes to food security (FAO, 2001). Therefore, unsustainable fishery practices would deplete the fish availability and abundance in the water bodies, leading to loss of livelihood and food insecurity to the fisherfolks and availability of poor-quality fish products to the consumers.

Theoretical Perspective

The theory of Self-Efficacy is derived from Bandura's Social Cognitive Theory. According to Bandura (1997) self-efficacy is the personal belief in one's ability to effectively do a particular task or assignment. Self-efficacy is the self-confidence in one's skills to successfully get a task done. Self-efficacy can help a person develop new skills and abilities. Self-efficacy is important to learning because it puts a person in the position to capitalize on their strengths and weaknesses (Ormrod, 2008). Bandura (1986) reported that a person's attitudes, commitments and efforts, determination when confronted with obstacles, emotional responses and the final results and achievements depends on their self-efficacy. However, a worker's self-efficacy is influenced by their skills, level of education and environmental factors. The self-efficacy of artisanal fisherfolks depends on their fishing skills and knowledge. According to Bandura (1997) the determinants of a worker's self-efficacy are experience and achievements, learning

from their peers' success and failures and a training programme. The implication of this theory to artisanal fisherfolks are that; past and successful fishery experiences will spur the fishermen to embark on fishing activity. Secondly, fisherfolks can develop their self-efficacy by learning from their peers and by participating in training on fishery practices. Thirdly, fishermen can belief in their abilities through verbal persuasion by extension agents. Finally, fishermen will derive self-efficacy from their emotional strength when there is little or no stress or risks. Therefore, the key to developing new fisherfolks' self-efficacy is for them to learn and raise their knowledge level on fishery practices from their peers and exposure to agricultural extension services.

Problem Statement

The artisanal fishery is gradually diminishing due to the effects of climate change while the demands for fish products are increasing (Alagoa *et al.,* 2011; Kapadia, 2002). The technology and practices in an artisanal fishery in Nigeria are crude and involved unhygienic activities. This resulted in high post-harvest losses of between 30–50 % Olowoniyan (2013) and poor-quality fish products (Dambatta and Sogbesan, 2015). The low quality of fish products is attributed to crude practices used by the artisanal fishers (Kyangwa and Odongkara, 2005). The crude practices resulted in economic losses to fisherfolk (Bolorunduro, 1996). There is dearth of information on the fisherfolks' perception of artisanal fishing enterprise in Nigeria. Studies on the perception of artisanal fishers are needed to determine areas where agricultural extension interventions would be provided. Hence there is a need to determine the fisherfolks' perception of artisanal fishing enterprise. The main objective of this study was to examine the fisherfolks' perception of the artisanal fishing enterprise in North central, Nigeria.

The specific objectives were to:

1. Identify the artisanal fisherfolks' preferred extension method and time to acquire training in the study area.

2. Examine the respondents' knowledge of sustainable fishery practices in the study area.

3. Assess the artisanal fisherfolks' perception of fishing enterprise in the study area.

Hypothesis of the Study

Ho$_1$: There isn't any significant relationship between the Perception of Fishing Enterprise and knowledge on Sustainable fishery practices.

Methodology

This study was carried out in North Central, Nigeria. Four - stage sampling procedure were used for the study. The first stage involved a purposive sampling of Kogi and Kwara States as the two states are alone the River Niger Bank. The second stage involved a purposive sampling of three (3) fishing local government areas (LGA)s in Kogi state and two (2) fishing LGAs in Kwara state along the Bank of the River Niger where there is the high rate of fishing activities. The Third stage involved a random selection of 5 fishing communities from each selected local government area in Kwara and Kogi States, Nigeria. The fourth stage involved a random selection of 20 fishers from each fishing community from the list of registered fisherfolks. To determine the knowledge level of the respondents, 25 knowledge statements were provided on a scale of yes and no, where Yes=1 and No =0. Decision rule: mean score ≤ 0.50 = Low Knowledge Area and mean score ≥ 0. 51 = High Knowledge Area. To identify the perception of the respondents on Fishing enterprise, respondents were provided with a list of 17 statements on the perception of fishing enterprise on a 5- point Likert type

scale of Strongly Disagreed = 1, Disagreed = 2, Undecided = 3, Agreed = 4, and Strongly Agreed = 5. The analysis of data was done with the use of frequencies count, percentages and mean score.

Results and Discussion

The result as presented in Table 1 showed that about 68.4 % of the fishers preferred a fishing ground visits by extension agents, 26.8 % preferred a home visit by extension agents and 4.7 % preferred to be contacted through a telephone call. This result implies that majority of the fisherfolks prefers fishing ground visit. This is in contrast with Adeokun and Adereti (2005) who stated that more than half (58.9 %) of women processors in Lagos State preferred extension training at home. The result presented in Table 1 showed that about 59.4 % of the fishers preferred group discussion, 20.5 % preferred demonstration method while 20.1 % preferred field trip and excursion method. This implies that the majority of the fisherfolks preferred group discussion method. The result showed that about 61.5 % of the fishers preferred radio, 23.4 % of the respondents preferred reading pamphlet and posters while 15.2 % preferred television. This implies that the majority of the fisherfolks preferred radio. About 38.9 % of the fisher indicated evening as the preferred time to acquire training, 26.2 % of the fishers preferred morning, 17.8 % of the respondents preferred any period of the day and 17.0 % of the respondents preferred afternoon. This result shows that the artisanal fisherfolks will participate in any training programme designed to improve their fishing skills and productivity.

Table1. Distribution of respondents by preferred extension methods and preferred time to acquire training

Variables	Percentage	Frequency
Individual method		
Home visit	131	26.8
Fishing ground visit	334	68.4
Telephone	23	4.7
Group method		
Group discussion	290	59.4
Demonstration method	100	20.5
Field trip/excursion	98	20.1
Mass method		
Radio	300	61.5
Television	74	15.1
Pamphlet/posters	114	23.4
Preferred time to acquire training		
Morning	128	26.2
Afternoon	83	17.0
Evening	190	38.9
Any period/Time	87	17.8

Source: Field Survey (2019).

The results of knowledge on sustainable artisanal fishery practices in table 2 revealed that 92.8 % of artisanal fishers had knowledge of the basic safety and precaution measures and was ranked first with the mean score of 0.93 and therefore considered high knowledge area. Drying is a way of preserving fish and is often done through the use of salt and the sun radiation with mean score of 0.88 and was ranked second and therefore considered to be high knowledge area. Awareness of the occupational risk involved in fishing was ranked third with mean score of 0.86, identification of all the various local species of fish (mean score = 0.85) and was ranked fourth and fish should be processed as soon as possible to avoid spoilage (mean score = 0.82) was ranked fifth. This indicates that the fisherfolks are well knowledgeable of most of the sustainable fishery practices in the study area.

However, there is need to provide training to the fisherfolks on low knowledge areas as Sakset and Gallardo (2013) reported that unsustainable fishing practices reduce fish abundance in water bodies and also affects artisanal fisherfolks' output, income and standard of living. This is in agreement with the findings of Adesoji and Kerere (2013) who stated that fisherfolks in Lagos State had low knowledge level.

Table 2. Knowledge of sustainable artisanal fishery practices

Knowledge Statements				
Variables	Yes Frequency (Percent)	Mean (Std.Dev)	Rank	Remark
1. identify all the diverse local species of fish	415 (85.0)	0.85 (0.357)	4	**High**
2. Fish abundance and diversity vary seasonally	274 (56.1)	0.56 (0.497)	20	**High**
3. Non-selective fishing gears (e.g mosquitoes nets) with excessively small mesh size is not an acceptable fishing practice	387 (79.3)	0.79 (0.405)	8	**High**
4. All fish equipment should be cleaned before each fishing trip	316 (64.8)	0.65 (0.478)	15	**High**
5. Fish exposure to high temperature could easily	392 (80.3)	0.80 (0.397)	7	**High**

make it spoil			
6. Fish captured in dirty and polluted water can harm the consumer	217 (44.5)	0.45 (0.497)	22	**Low**
7. Knowledge of fishery regulations and Acts.	309 (63.3)	0.63 (0.482)	16	**High**
8. Handling fish when sick can contaminate the fish.	198 (40.6)	0.41 (0.491)	24	**Low**
9. Pesticides/chemicals usage is a bad fishing practice.	326 (66.8)	0.69 (0.471)	13	**High**
10. Drying done through the use of salt and sun radiation.	431 (88.3)	0.88 (0.321)	2	**High**
11. smoked fish placed on a raised platform prevents the uptake of moisture and insect infestation.	287 (58.8)	0.58 (0.493)	18	**High**
12. All materials used in packing fish must be clean and designed for food.	290 (59.4)	0.59 (0.491)	17	**High**
13. Packing processed or smoked fish into wooden or cardboard boxes or jute bags before transportation prevents fish breakages	285 (58.4)	0.58 (0.493)	18	**High**
14. knows the basic fishing safety and precaution measures	453 (92.8)	0.93 (0.259)	1	**High**
15. am aware of the occupational risk involved in fishing	420 (86.1)	0.86 (0.347)	3	**High**
16. use of vegetable oil improved appearance and preservation of smoked fish	200 (41.0)	0.41 (0.492)	24	**Low**
17. Pouring ice on captured fish preserves it	363 (74.4)	0.74 (0.437)	11	**High**
18. Keeps record of fishing activities.	323 (66.2)	0.66 (0.474)	14	**High**
19. Selling processed fish increases the fishers' profit margin	269 (55.1)	0.55 (0.498)	21	**High**
20. Unfavourable and continuous changes to climatic condition (drought, flooding, etc.) reduces fish harvest	365 (74.8)	0.74 (0.437)	11	**High**
21. Use of chemicals and overfishing can make fish species to go into extinction	369 (75.6)	0.75 (0.429)	10	**High**
22. Knowledge of laws on food hygiene and safety	212 (43.4)	0.43 (0.496)	23	**Low**
23. Local weather forecasting (forecast when there will be rainfall, flood, drought etc.)	373 (76.4)	0.76 (0.425)	9	**High**
24. Uncovered cuts/injuries can increase the risk of fish contamination with germs.	394(80.7)	0.81 (0.395)	6	**High**
25. Fish should be processed as soon as possible to avoid spoilage	398 (81.6)	0.82 (0.388)	5	**High**

Source: Field Survey (2019), Note: - Scale: Yes = 1, No = 0, (0+1/2 =0.5) Decision rule: mean score ≤ 0.50 = Low Knowledge Area and mean score $\geq 0. 51$ = High Knowledge Area.

The result presented in Table 3 showed that the perception statement that fish products should be free of any chemical ($\bar{x}$=4.47) was ranked first, use of diverse fishing gears increases fish harvest and profit ($\bar{x}$=4.37) was ranked second, fishing is a labour intensive and time consuming job ($\bar{x}$=4.36) was ranked third, bad fishing practices deplete fish diversity and abundance ($\bar{x}$=4.12), fish diversity and abundance in the river vary according to season ($\bar{x}$=4.04) and fishers are jobless during the off-fishing season ($\bar{x}$=3.87). This indicates that the fisherfolks has high level of awareness of their fishing environment. There is a need for better understanding of the fisherfolks' perception of artisanal fishing operations before

provision of training. This is in line with Cinti *et al.,* (2014) who stated that a clear understanding of how fishers perceive their local fishery operations and management will help extension service providers to device educational and management strategies to enhance their fishing skills, output and income.

Table 3. Perception on artisanal fishing enterprise

Perception Statements	Mean score	STD. Dev	Rank
1.Fishing is a labour intensive and time-consuming job	4.36	±0.71	3
2. Value addition initiatives increase profit	3.04	±1.08	13
3. Membership of fishing Association/Groups is compulsory.	2.66	±1.41	16
4. Fishing activities is affected by climate change	3.44	±0.81	11
5. Fishing business requires low capital investment/outlay	2.91	±1.09	14
6. I take up fishing because it's my family tradition/occupation	2.66	±1.36	17
7. Fishing activities is controlled and regulated by the community leaders	3.49	±1.01	9
8. Use of diverse fishing gears increases the fish harvest and profit.	4.37	±0.75	2
9. Fishers are jobless during the off-fishing season.	3.87	±1.09	6
10. Unregulated fishing activities causes competition and conflicts over fishing grounds.	2.79	±1.23	15
11. Fish diversity and abundance in the river vary according to season.	4.04	±1.03	5
12. To be a fisher prior Training is necessary	3.48	±1.15	10
13. Seasonal migration of fish species cause fishers to migrate too.	3.14	±1.42	12
14. Fish products should be free of any chemical	4.47	±0.79	1
15. Bad fishing practices deplete fish diversity and abundance.	4.12	±0.77	4
16. Fishers needs modern fishery information for their business.	3.79	±1.02	8
18. Processing spoilt fish affect the quality of processed fish.	3.83	±1.04	7
19. Government policies are supportive to fishers.	2.93	±0.71	3
20. Government interventions are needed in the fishing settlements.	3.99	±1.08	13

Source: Field Survey (2019), Likert scale: Strongly Disagreed=1, Disagreed =2, Undecided =3, Agreed =4, strongly agreed =5.

Ho$_1$: There isn't any significant relationship between the Perception of Fishing Enterprise and knowledge on Sustainable fishery practices

The result in Table 4 revealed that there is a significant relationship between the respondents' perception of fishing enterprise and knowledge on sustainable fishery practices (r= 0.119; p= 0.001) at 1 percent level of significance. The infers that an increase in the fisherfolks' knowledge on sustainable fishery practices will lead to an increase in their perception of fishing enterprise. This is expected as acquisition of knowledge through training on fishing practices will enhance their fishing skills and bring about positive changes in their perception of fishing enterprise.

Table 4. The result of Pearson Product Moment Correlation between the Perception of fishing enterprise and knowledge on sustainable fishery practices

Variable	r Value	p Value	Remark
Perception of Fishing Enterprise And Knowledge on Sustainable Fishery Practices	0.119[***]	0.001	Significant

Note: *** Significant at 1%.

Conclusion

Based on the findings of this study, the study concluded that the majority of fisherfolks preferred fishing ground visit and group discussion by extension agents. Majority preferred radio as a means of mass media communication and evening as the most preferred time of contact by an extension agent. Majority of the fisherfolks has knowledge on most of the sustainable fishery practices in the study area. The highest ranked perception statement was that fish products should be free of any chemical. The author therefore recommends:

1. Extension organizations should provide training in the knowledge areas such hygienic handling of fish products.
2. Extension service deliveries to the fisherfolks should be frequent and should involve the fishing ground visit and group discussion methods.

Government should provide grants and subsidized inputs to the fisherfolks

Conflict of Interest

The authors declare that they have no conflict of interest.

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