Capacity Building Needs of Artisanal Fisherfolks in North Central, Nigeria

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Abstract

The study analyzed the capacity building needs of artisanal fisherfolks in North Central, Nigeria. The Data were collected with the use of a questionnaire and analysed using frequency, percentages, mean score and Correlation. The results showed that about 99.2% of the fishers were male and the mean age of the fishers was 43.9ears. The mean years of experience were 24.3. The mean quantity of catch per day was 17.9 Kg and 6 persons was the average household size. About 47.33 % of the respondents has a high knowledge level on improved fishing practices. The fisherfolks required capacity building in handling and transportation of captured fish ($\bar{x}=6.59$), use and repair of nets, cages and traps (mean=6.29), use and maintenance of multiple hooks on a line ($\bar{x}=6.71$), canoe use and maintenance ($\bar{x}=6.74$), use of chorkor smoker ($\bar{x}=6.68$), fish marketing and distribution ($\bar{x}=6.65$), credit acquisition ($\bar{x}=5.92$), maintaining personal and environmental health hygiene ($\bar{x}=6.0$) and local weather forecasting ($\bar{x}=6.32$). The highest ranked constraints affecting artisanal fishing practices were the high cost of fishing inputs and inadequate access to credit facilities ($\bar{x}=2.72$). The study therefore recommends the provision of training in the identified areas of capacity building needs and the provision of more frequent and effective extension services to the fisherfolks.

Introduction

Agriculture plays an important role in process of economic development of any country. The Agricultural sector provides food for human consumption, raw materials for the industries and also serves as a source of foreign exchange earnings for Nigeria. The Nigerian agricultural sector has several untapped potentials for growth and development in the availability of land, water, labour and large internal markets. The Nigerian agricultural sector is made up of four sub-sectors, namely crop production, livestock, forestry and fisheries. The fishing sub-sector of Agriculture is important to the Nigerian economy as it contributed about 1.64% to the Nigerian GDP in the year 2018 from 1.34% in the year 2017 (NBS, 2019).

Fish have several nutritional and health benefits over meat as it is low in cholesterol and has high vitamins and minerals contents. Fish is a vital, cheap and readily available source of protein for low income countries like Nigeria and it accounts for about 17 percent of the global animal-sourced protein. (FAO, 2018, Bene, *et al.,* 2015). The fish by-products are primarily used in the formulation of animal feeds and also for pharmaceutical purposes. Nigerians are the largest fish consumers in Africa with about 3.2 million metric tonnes of fish consumed yearly (FAO, 2022; FAO, 2016; Olaoye and Oloruntoba, 2011).

Artisanal fishing involves the use of crude crafts and gears and local knowledge in catching diverse species of fish. Also,

artisanal fishing can be defined as the method of catching fish or any aquatic organism with the use of locally fabricated tools and techniques. The main motives of the fisherfolks are personal and family consumption, and income purposes (FAO, 2008). Onuoha, (2009) stated that artisanal fisheries are characterized by low capital outlay and lacks of required equipment. The artisanal fishing practice is an important source of livelihood for the fisherfolks. Some of the key characteristics of the artisanal fisheries were presented in Table 1 below.

Table 1. Characteristics of the Artisanal Fisheries

Variables	Characteristics of the Artisanal Fisheries
Gender	Fish capturing is dominated by males, there are fisherwomen too, and females/women are mostly involved in processing activities
Gears	Passive and multiple gears (Diverse-nets, lines, hooks, spear, cages etc.)
Crafts	Gourds, Diverse canoe, boat, small vessels, very few motorized vessels
Technologies	Crude tools, traditional methods, low level of technology, labour intensive,
Capital Outlay	Low as it uses mostly locally made gears and crafts
Target specie(s)	Multi- species fishing activities
Knowledge	Local knowledge of fisheries (indigenous practices), because of little or no contact with fisheries extension agents
Hazards/Risks	Highly risky occupation, Risk includes drowning, attacks from predators, injuries on the body, risks of inhaling smokes, respiratory illnesses, muscular disorders sun bites etc.
Distance covered	Short distances, not too far, inshore, fishing activities close to the settlements
Fishing Settlement	Most of the settlement lacks basics infrastructure like electricity, pipe borne water, a good road network, and health care centres. Remote to the neighboring urban centres. (Underdeveloped). Few people live there.
Occupational style	Part-time, seasonal, multi-occupational
Goal	Food, income, game and pleasure
Local fisheries regulation and management	Customary rules through the village heads, fishing edicts, fishing regulations, and government policies through their agencies
Value Addition Initiatives	Low value addition initiatives - mostly Smoking, frying, drying, little or no cold preservation
Processed fish product	Low quality products due to poor hygienic practices
Marketing Outlets	Local village markets, retail outlets in the urban city, middle men/agents
Post-harvest fish losses	High - due to destructive fishing methods, setting gears for a long period, long distance fishing trip, discarded as by-catch, poor hygienic practices, poor processing methods, marketing and distribution problem
Constraints	Inadequate/lack of access to extension, Poor road networks, lacks of modern fish processing equipment, the problem of middle men, no financial support, flooding, drought, health risks etc.

Source: Ifabiyi (2019); Ifabiyi *et al.,* (2017); Sumaila, (2017); Gibson and Sumaila (2017); Onuoha, (2009); FAO, (2008).

There are increasing evidences that capacity building aids development. According to Hornby, (2006) capacity is the ability, skills and experience that an individual need to get a specific task or job done. Capacity building is the process of improving the abilities, skills and character possessed by an individual for proficiency in a given task. Olaitan, *et al.,* (2009) stated that capacity building is the process of acquiring information, skills and attitude that is needed to get a particular task done. According to Youdeowei and Kwarteng, (2006) capacity building need is the difference between the required level of competence and the present level of competence. Capacity building need can also be defined as the competency and character that is needed to provide solutions to problem situations (Owona, e*t al.,* 2010).

The Problem Statement

Adisa, (2011) asserted that the agricultural extension sector in Nigeria must rise to the competency needs of the clientele. However, fisheries extension services in Nigeria had been reported to be ineffective and not properly organized Samson, (2006), as there is inadequate information on the extension needs of the fisherfolks (Okwu, e*t al.,* 2011); (Raji, e*t al.,* 2012). reported that fisherfolks had low knowledge level on improved fishing practices. Hence, there is a need to determine the capacity building needs of the fisherfolks. The identification of fisherfolks' areas of capacity building needs would assist agricultural extension service providers to match capacity building programmes to their needs, since any interventions that do not take the needs of the users into consideration tended to be wasting valuable resources (Al–Shadiadeh, 2007). Therefore, there is a need to determine the capacity building needs of artisanal fisherfolks in North Central, Nigeria. The specific objectives of the study are to:

1. identify the socio-economic characteristics of respondents.
2. identify the sources of information of the respondents on fishing practices in the study area.
3. determine the respondents' knowledge level on improved fishing practices in the study area.
4. assess the skills of the fisherfolks that requires capacity building in the study area.
5. Identify the constraints affecting the fisherfolks in the study area.

Hypothesis of the Study

Ho1: There is no significant relationship between the knowledge of fishing practices of the respondents and their capacity building needs.

Methodology

The research work was carried out in Kogi and Kwara States, North Central, Nigeria. The sampling frame for this study consists of all the fisherfolks in North

Central, Nigeria. A Four - stage sampling techniques were used to select the respondents for the study. The first stage involved a purposive sampling of Kogi and Kwara States as the two states are alone on 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 with the Bank of the River Niger where there were fisherfolks. The selected LGAs in Kwara State were Patigi and Edu while the selected LGAs in Kogi State were Lokoja, Idah and Kogi LGAs. The Third stage involved the random selection of 5 fishing communities from each selected local government areas in Kwara and Kogi States, Nigeria. The fourth stage involved a random selection of 20 artisanal fishers from each fishing community from the list of registered

artisanal fisherfolks with the Fishery Department under the Ministry of Agriculture and Natural Resources in kwara and Kogi States respectively. To determine the knowledge level of the respondents, 22 knowledge statements were provided on a Yes and No scale, where Yes=1 and No =0. The Respondents with a knowledge score of ≤ 33 % (1-33%) were categorized as having a Low Knowledge Level, a Medium Knowledge Area score range is between 34-66 % and those that have a Knowledge score range of between 67-100% were categorized as High Knowledge Level. To investigate the skills of artisanal fishers in the study area, the FAO Model of Needs Determination was used through job analysis by ascertaining the Frequency of performance, Importance of tasks and Difficulties faced when performing the fishing tasks. Frequency of performance was measured on a 4-point Likert type scale of

occasionally, weekly to monthly, daily to weekly and daily and scores of 1, 2, 3 and 4 were assigned, respectively. The Importance of fishing practices was measured on a 3-≥point Likert type scale of slightly important, moderately important, and extremely important with scores of 1, 2 and 3. Difficulty in performing the fishing tasks were measured as easy, moderately difficult, very difficult and extremely difficult with scores of 1, 2, 3 and 4. All the scores were pooled and means standardized. Thereafter, all practices with means score above 5.95 were a practice or task where capacity building is required. Data were analysed using frequencies, mean, percentages and Pearson Product Moment Correlation.

Results and Discussion

The First Objective: Ascertain the Socio-economic Characteristics of Respondents

Table 2. The Result of Socio-economic Characteristics of the Respondents

Socio-economic Characteristics	Frequency	Percentage	Mean Score	S.D
Gender				
Male	484	99.2		
Female	4	0.8		
Age (Year)			43.9 Years	±10.5
20 -30	73	14.9		
31- 40	118	24.2		
41– 50	137	28.1		
51– 60	113	23.2		
61-70	41	8.4		
≥ 70	6	1.2		
Marital Status				
Single	33	6.8		
Married	424	86.9		
Separated	17	3.5		
Widowed	14	2.87		
Educational Status				
No formal	190	38.9		
Primary	180	36.9		
Secondary	79	16.2		
Tertiary	39	8.0		
Membership of Association				
Yes	169	34.6		
No	319	65.4		
Contact with Extension				

Service				
Yes	148	30.3		
No	340	69.7		
Other Supportive Occupation				
Farming	263	53.9		
Trading	111	22.8		
Artisans	48	9.8		
Others	66	13.5		
Household size			6 Persons	±**4.**2
Below 5	205	42.1		
5 – 10	232	47.5		
Above 10	51	10.4		
Years of Fishing Experience			24.3 Years	±10.9
Below 10	69	14.1		
11 – 20	133	27.3		
21 – 30	142	29.1		
Above 30	144	29.5		
Monthly Income			51,702 Naira	±31477
Below 20,000	93	19.1		
20,000-40,000	136	27.9		
41,000- 60,000	121	24.7		
61,000- 80,000	72	14.8		
Above 80,000	66	13.5		
Quantity of Catch per Day (KG)			17.9 Kg	**±15.4**
Below 5	105	21.5		
5- 10	166	34.0		
11- 20	133	27.3		
21 – 30	39	8.0		
31 – 40	37	7.6		
Above 40	8	1.6		
Number fishing trips per Day			2 Trips	±0.6
One trip	206	42.2		
Two trips	252	51.6		
Three trips	28	5.8		
Four trips	2	0.4		
Craft Type				
Use of Boats with Engine	15	3.1		
Use of Boats without Engine	130	26.6		
Use of Dugout/Plank Canoe	303	62.1		
Use of Gourds	40	8.2		

Source: Field Survey (2019), S.D – Standard Deviation.

The result in Table 2 revealed that the majority of the respondents (99.2 %) were males while 0.8% were females. The artisanal fishing being dominated by males might be attributed to the fact that fishing activities are strenuous in nature. The result in Table 2 revealed that 43.9 years was the mean age of the fisherfolks. The implication

of this result is that the fisherfolks were within the economically active age bracket. The result suggested that artisanal fishery tasks require much energy and vigor. The result presented in Table 2 showed that about 86.9% of the respondents were married. Marriage can be used to assess the level of responsibility in society. The result presented in Table 2 showed that 38.9 % of the respondents had no formal education, 36.9 % of the respondents had primary education, 16.2 % had secondary education and 8.0 % of the respondents had tertiary education. This implies that 61.1% of the fisherfolks have formal education. The result presented in Table 2 further revealed that about 65.4 % were not members of any fishing association. Membership of a fishing association is an important source of social capital which could be used to enhance the fishers' access to resources and productivity. This result is in agreement with the findings of Ifabiyi *et. al.,* (2014) that reported that farmers participation in social networks links them to resources like credits, inputs and farmland. The presented result in Table 2 revealed that a higher percentage (69.7 %) of the fishers had no contact with extension services. This implies that there is inadequate access to extension services. About 53.9 % of the fishers were farmers. This implies that farming is the main supportive occupation of fisherfolks. The

result as presented in Table 2 showed that the mean household size of the fishers was 6 persons. The household size might have an impact on fishing activities as family members could be involved in fishing tasks. The mean years of fishing experience was 24.3 years. The implies that the fisherfolks have wealth of experience in artisanal fishing practices. This result is in agreement with the findings of Adisa *et al.,* (2021) who reported that the average age of the fisherfolks in Kogi state was 24 years. The average monthly income of the fisherfolks was 51,702 Naira. This is more than the present national minimum wage of 30,000 Naira in Nigeria. This infers that artisanal fishing is a viable source of livelihood. The result presented in Table 2 showed that the respondents' mean quantity of catch per day was 17.9 kg. The mean number of fishing trips per day was 2 trips. This could be due to the stressful nature of fishing. Table 2 showed that about 62.1 % of the fisherfolks utilized canoe for fishing activities. This implies that the majority of fisherfolks uses locally fabricated crafts. This infers that locally fabricated canoe is readily available and inexpensive.

The Second Objective: Identify the sources of information of the respondents on fishing practices in the Study Area.
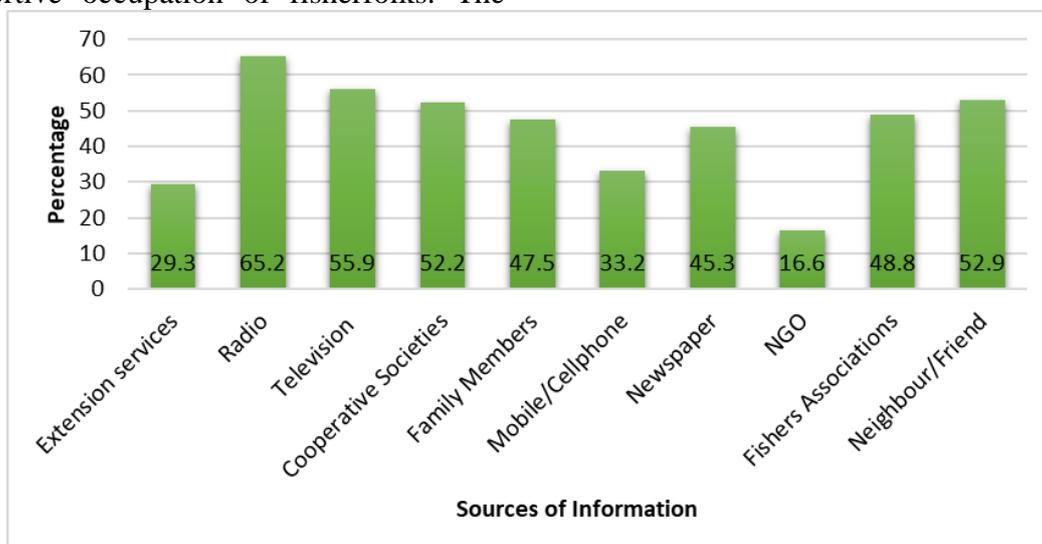

Figure 1. Distribution of Respondents according to their Sources of Information Source: Field Survey (2019), Note: Multiple responses were allowed

The result as presented in Figure 1 revealed that around 65.2 % of the fisherfolks got information on their fishing practices through the use of radio and 55.9% of the respondents got information on fishing practices through Television and 52.9 % of the respondents got information from their neighbours and friends. This denotes that radio and television are the most important sources of information to the fisherfolks in the study area.

The Third Objective: Determine the respondents' knowledge level on improved fishing practices in the study area
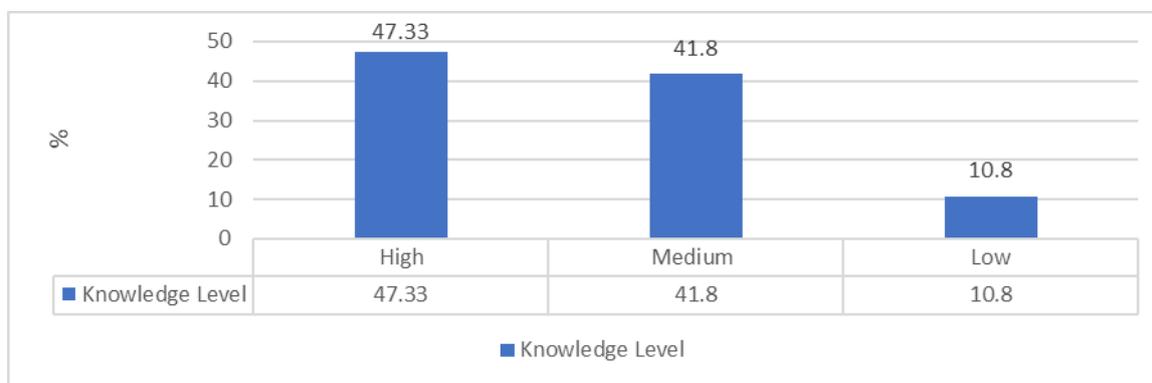

Figure 2. Distribution of Respondents based on their Knowledge Level on Improved Fishing Practices, Source: Field Survey (2019)

The result in Figure 2 showed that about 47.33 % of the fisherfolks had a high knowledge level on Improved fishing knowledge level. This result implies that a higher percentage of the fisherfolks still requires training on improved fishing practices in the study area. This is important practices, 41.8 had a medium knowledge level on improved fishing practices and about 10.8 % of the respondents had a low so as to enhance their knowledge on improved fishing practices

The Fourth Objective: Assess the Skills of the Fisherfolks that requires Capacity Building in the Study Area

Table 3. Distribution of Respondents based on their Capacity Building Needs (N= 488)

Fishing Tasks	Frequency of Performance	Level of Importance	Level of Difficulty	Aggregate Score	Remark If Capacity building Is Needed
1. Identification and sorting of fish	2.44	1.95	1.32	5.72	Not Needed
2. Handling and transportation of captured fish from the landing site	2.74	2.59	1.26	6.59	**Needed**
3. Use and repair of nets, cage and traps	1.72	2.16	2.41	6.29	**Needed**
4. Use and maintenance of multiple hooks on a line	2.42	2.78	1.51	6.71	**Needed**
5. Canoe use and	2.31	2.57	1.86	6.74	**Needed**

maintenance					
6. Icing of fish	1.46	1.28	1.46	4.2	Not Needed
7. Outboard engine use and repairs	1.30	1.47	2.17	4.94	Not Needed
8. Rescue, resuscitation and safety skill	1.25	1.68	2.08	5.01	Not Needed
9. Use of chorkor smoker	2.32	2.53	1.83	6.68	**Needed**
10. Drying of fish	1.91	1.97	1.24	5.12	Not Needed
11. Salting of fish	2.12	2.09	1.38	5.59	Not Needed
12. Branding/packaging of processed fish	1.65	1.65	2.02	5.32	Not Needed
13. Management of storage pest	1.49	1.78	1.84	5.11	Not Needed
14. Fish marketing and distribution	2.52	2.04	2.09	6.65	**Needed**
15. Record keeping	1.63	1.99	2.88	5.5	Not Needed
16. Credit Acquisition	1.62	1.78	2.52	5.92	**Needed**
17. Maintaining personal and environmental health hygiene	2.29	2.21	1.5	6.0	**Needed**
18. Local weather forecasting	2.09	1.98	2.25	6.32	**Needed**
Threshold score				**5.80**	

Source: Field Survey (2019), Decision Rule: Threshold score $\geq$ 5.80 - Needs Capacity Building, Threshold score $\leq$ 5.80 - Capacity building Not Needed.

The result presented in Table 3 revealed that the respondents requires capacity building in the following tasks: handling and transportation of captured fish ($\bar{x}$=6.59), use and repair of nets, cages and traps (mean=6.29), use and maintenance of multiple hook on a line ($\bar{x}$=6.71), canoe use and maintenance ($\bar{x}$=6.74), use of chorkor smoker ($\bar{x}$=6.68), fish marketing and distribution ($\bar{x}$=6.65), credit acquisition ($\bar{x}$=5.92), maintaining personal and environmental health hygiene ($\bar{x}$=6.0) and local weather forecasting ($\bar{x}$=6.32). This result indicates the need for the provision of training as the absence of competencies in the identified areas will limit the capacity of the fisherfolks. This study is similar to the findings of Ogunremi, (2016), Asa and Inyang (2016); Okwu, *et al*., (2011); Asa *et al*., (2008) and Samson (2006) who reported that fisherfolks needs training on survival measures and safety strategies, water surveying, proper launching of boat, landing methods, fishing regulation, use and maintenance of gears, boats and other machineries, fish harvesting, preservation and smoking methods, marketing, cooperative society management and access to credit. Olowoniyan *et al.,* (1998), also reported that artisanal fisherfolks needs training on fish handling and transportation as poor handling and transportation are some of the factors responsible for flesh fish deterioration and short shelf-life. Fisherfolks should be encouraged to attend training programme so as to get up to-date information on fishing practices.

Furthermore, this study is in line with the study of Quagrainie and Chu, (2019) that stated that fisherfolks' needs capacity building on marketing system and price negotiation skills, improved fish processing techniques, fishing gear and craft maintenance skills and credit acquisition skills.

Fifth Objective: Identify the Constraints affecting the Fisherfolks in the Study Area

Table 4. Mean Distribution of Constructs used to determine Constraints Faced by Fisherfolks

Constraints	Mean			
		Std. dev	Rank	Remark
Lack of readily available market	1.37	±0.59	16	Minor
Inadequate technical skills	2.00	±0.56	10	**Major**
Poor access roads	2.01	±0.66	9	**Major**
Health risks/hazards	2.46	±0.73	5	**Major**
Tear and wear of Fishing gears.	1.75	±0.77	12	Minor
High tax charges	2.34	±0.69	7	**Major**
High rate of illiteracy	2.37	±0.75	6	**Major**
High cost of fishing inputs	2.72	±0.51	1	**Major**
Lack of storage facilities	2.70	±0.55	3	**Major**
Inadequate access to credit facilities	2.72	±0.54	1	**Major**
Inadequate access to extension services	2.49	±0.73	4	**Major**
Flooding/Tide and harsh water current	2.09	±0.92	8	**Major**
Drought / Drying up of river during dry season	1.95	±0.89	11	Minor
Problem of middle men	1.62	±0.61	13	Minor
Risk of Theft	1.41	±0.63	15	Minor
Seasonality of fish harvest	1.62	±0.59	13	Minor

Source: Author's Field Survey (2019). Note: Likert scale: Very severe = 3, Severe= 2, Not a Constraint = 1, Bench mark for Constraint is mean score = 2.00. Decision rule: Mean score ≥ 2.0 (Major Constraint), Mean score ≤ 1.99 (Minor Constraint).

The result in Table 4 revealed that the major constraints were high cost of fishing inputs and inadequate access to credit facilities ($\bar{x}$=2.72), lack of storage equipment ($\bar{x}$=2.70), inadequate access to extension services ($\bar{x}$=2.49), health risks ($\bar{x}$=2.46), high rate of illiteracy ($\bar{x}$=2.37), high tax charges ($\bar{x}$=2.34), flooding, tide and harsh water current ($\bar{x}$=2.09), poor access roads ($\bar{x}$=2.01) and inadequate technical skills ($\bar{x}$=2.00). High cost of fishing inputs and inadequate access to credit would limit their fishing capacity. This concurred with the results of Onomolease and Oriakhi (2011) that stated that fisherfolks in Delta State, Nigeria were constrained by high cost of fishing inputs and inadequate capital.

Ho1: There is no significant relationship between the knowledge of fishing practices of the fisherfolks and their capacity building needs.

Table 5. Result of Pearson Product Moment Correlation between the knowledge Level of the Respondents and their Capacity Buildings Needs

Variable	r Value	p Value	Remark
Knowledge Level and Capacity Building Needs	-0.258[**]	0.001	Significant

Note: ** Significant at 1%.

The result presented in Table 5 revealed that there is an inverse relationship between the respondents' knowledge level and their capacity building needs (r= -0.258; p= 0.001) at 1 percent level of significance. The implication of this result is that an increase in the fishers' knowledge level will lead to a decrease in their capacity building needs. The attainment of more knowledge through training will enhance their fishing skills and bring about positive changes in their attitudes.

Conclusion

This study therefore concluded that fisherfolks requires capacity building on handling and transportation of captured fish, use and repair of nets, cages and traps, use and maintenance of multiple hook on a line, canoe use and maintenance, use of chorkor smoker, fish marketing and distribution, credit acquisition, maintaining personal and environmental health hygiene and local weather forecasting. The Higher percentage of the fisherfolks has low to medium knowledge level on improved fishing practices in the study area.

Radio and Television is the most important source of information to the fisherfolks in the study area. The High cost of inputs and inadequate access to credit facilities were the most severe constraint affecting artisanal fisherfolks in the North Central, Nigeria. The following recommendations were made;

1. Extension organizations should train the fishers in the identified areas of capacity building needs.

2. Extension service deliveries to the fisherfolks should be more frequent and effectives.

3. Government and Non-governmental agencies concerned with artisanal fisheries should work hard to minimise the constraints affecting artisanal fishing practices by assisting the fisherfolks to enhance their productivity through the provisions of credit facilities and fishing inputs.

Conflict of Interest

The authors declare that they have no conflict of interest.

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