ASSESSMENT OF FISHERY COOPERATIVE EFFECTS ON MEMBERS PERFORMANCE IN RIVER STATES NIGERIA

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ABSTRACT
Fisheries constitute an important sector in Nigeria agriculture, providing valuable food and employment to millions and also serving as source of livelihoods mainly for rural dwellers in coastal communities. However, Nigeria fish production volume of 0.5 tonnes cannot meet the annual demand of 1.3 million tonnes. Average annual fish consumption in the country has, therefore stagnated at 9.2kg per capita, a situation that resulted in a huge supply and consumption gap. The study, therefore, had its thrust on assessing the effects of fisheries cooperative societies in enhancing its member's performance in Rivers State. Data were obtained from 360 cooperative fishermen from 12 purposively selected Local Government Areas (LGAs) of Rivers State. Data obtained were analyzed with both descriptive and inferential statistics. The findings revealed that, the respondents were of low educational background and that affected their initiative to improve the technique in the fish production, as well as management of the fishing business. It was also revealed that the distance covered in the fishing exploit; and, fishing experience, had significant influence on the fishermen returns as fishermen who went far made more catch. Also, the findings from the study gave evidence that there are three major sources used in the fishing exploit, namely; deep sea approach; the riverside; and, the creek. It was observed that more fishermen preferred the creek as fish tend to hide at the creek, followed by the riverside approach, with few exploiting the deep sea. The findings further revealed that fishermen are faced with various degrees of challenges which range from pollution, climate change/bad weather, financial challenge, storage and processing facility, as well as high cost of fishing tools. From the study, the researcher recommends amongst others, that fishermen in Rivers State should endeavour to engage in group fish farming through the formation of cooperative societies and that government should provide basic education for these fishermen and their households. Lastly, financial institutions should encourage the fishermen with credit facilities to boost their fish production.

Key words: Assessment, Fishery cooperative, Effect, Members performance.

Statement of the Problem

The search for adequate food supply for the soaring population in most parts of Nigeria has been a serious concern for the government and many international agricultural agencies. According to Okunlola, Oludare and Akinwalere (2011), the issue of malnutrition and inadequate food supply is a critical problem and the energy intake by Nigerians averaged 225 kilocalories a day against internationally estimated minimum of 2500 and 2800 kilocalories daily. About 13-18 million people (mostly children) also die yearly from sickness related to fish protein deficiency, (UNO, 2012). This was as a result of the fact that, over 70% of Nigerians lived within the ambit of poverty and they are poor to afford food required for healthy growth of children (Okumadewa, 2006).

It is important to note that the global food equation recognizes two major protein components, namely, food crop components and animal protein component. Animal protein sources include meal from cattle, sheep and goat, poultry, eggs, milk and milk products, wild life and fish (Okunlola, Oludare; and Akinwalere, 2011). But among all these sources of protein, fish is the only source of protein that is affordable for every household that are poor. As a result of the bottlenecks in the production of fish, there has been the problem of meeting the percentage protein consumption required by the average Nigerian. According to FAO (2004), the per capita protein intake as recommended by FAO is 55gm out of which 10.6 gm should be from animal origin. The Nigerian food balance sheet showed that only 4.82 kg of animal protein in consumed which is only about 10% of the recommended total protein intake (Ajayi in Adekoya, 2004).

In view of the situation above, there is the need to assess the effects of fishery cooperative societies relative to the quantum of fish production. Over the years, fish shortage coupled with high prices in Nigeria have indicated that domestic output has not been able to provide most Nigerians fish at affordable prices, coupled with the increase in petroleum exploration. The natural habitat of fish is becoming unconducive for fish to survive. This had made the cost of fish capture very expensive. Rivers State is endowed with inland and marine waters for fish capture. The availability of fish in the water due to population had been of great concern. This had affected both fishermen ability to catch fish and maintain the facility for fishing. Consequently, it affected their income from fishing. The incessant movement of vessels makes things worst for capture, as it poses great danger for both the life of fishermen and their equipment.

It is against this backdrop that the researchers sought to asses the contributions of fishery cooperatives towards the quantum of fish produced by its membersin Rivers State. It is necessary to conduct this study, so as to determine if the contemporary fishing cooperatives have improved the livelihood of their members through the quantum of fish produce, enhancement of their income, as well as insight on the challenges the cooperatives face. Thus, the researchers intend to find answers to these questions: To what extent does membership of fishery cooperative society enhance the productivity and income of the fishermen?What challenges constrain the optimal performance of the fishery cooperatives and how can such be overcome?

Objectives of the Study
The broad objective of this study is to assess   the effects of fisheries cooperative societies on the performance of its members in Rivers State. The specific objectives are to:
i.   Describe the socio-economic characteristics of the members of the Fishery cooperatives.
ii.   Ascertain the service rendered by the fishery cooperatives to their members.
iii.   Determine whether membership of fishery cooperatives has enhanced the income of the fishermen
iv.   Identify the challenges faced by the fishermen against their optimal performance.

Hypothesis of the study
H_{01}:   Membership of a fishery cooperative would not significantly enhance the income of fishermen in River State.

METHODS
Area of Study

The area of the study is Rivers State. Rivers State is one of the 36 states of Nigeria. River State is bounded on the South by the Atlantic Ocean, to the North by Imo, Abia and Anambra States, to the East by Akwa Ibom State and to the West by Bayelsa and Delta States. It is home to many indigenous ethnic groups: Ikwerre, Ibani, Opobo, Okrika, Kalabari, Etche, Ogba, Ogoni, Engenni and others. The inland part of Rivers State consists of tropical rainforest; towards the coast the typical Niger Delta environment features many mangrove swamps.

Prior to the discovery of oil in commercial quantity in 1951, Agriculture was the primary occupation of the people of Rivers State. The fishing industry is an important sector in Rivers State. Besides being lucrative, fishing is also a favorite past time activity. There are about 270 species of fish existing with many artisanal fishermen in the riverine areas. The State provides valuable sea foods such as crabs, oysters, shrimps and sea snails, among others.

Population of the Study

The population of the study consists of all fishery cooperative societies in River State. Based on the information obtained from the State Ministry of Agriculture; there are 23 LGAs which cut across 4 Agricultural zones with 197 registered fishery cooperative societies in Rivers State and these cooperatives have membership size of 3600. Thus, this is the study population.

Sample Size Determination and Sampling Procedure

The sample size of the study is 360 fishermen. This was generated using Taro Yamene formula, which is stated thus;

$$n = \frac{N}{1 + N(e)^2}$$

Table 1: Distribution of Selected Respondents by LGAs and their Agric Zones

Selected LGAs & their Agric zones	No of Selected fishery cooperative in LGAs	No of Selected fishermen (6 fishermen in each coop.)
Port Harcourt zone (A)		
Ogu/bolo	5	6 x 5 = 30
Okrika	5	6 x 5 = 30
Port Harcourt	5	6 x 5 = 30
Degema zone (B)		
Akuku-Toru	5	6 x 5 = 30
Asari – Toru	5	6 x 5 = 30
Degema	5	6 x 5 = 30
Ahoada zone (C)		
Ahoada East	5	6 x 5 = 30
Ahoada west	5	6 x 5 = 30
Khana	5	6 x 5 = 30
Bonny zone (D)		
Opobo/Nkoro	5	6 x 5 = 30
Andoni	5	6 x 5 = 30
Bonny	5	6 x 5 = 30
Total = 12 LGAs	**60 Fishery Coops.**	**360 fishermen**

Source; Ministry of Agriculture, River State.

The 12 L.G.As were selected using judgemental sampling method. The selection was based on high concentration of fishing activities and accessibility in the area. The researcher also used purposive sampling

method in selecting 5 most viable fishery cooperative societies from each of the selected LGAs and this gives a total of 60 cooperative societies and 6 fishermen from each of the selected cooperative societies totaling 360 which served as the study sample.

Sources of Data

Data was collected through primary and secondary sources. Primary source of data was structured questionnaires administered to the respondents' (fishermen) through their cooperative leaders; while the secondary information was sourced from text books; journals; conference papers; as well as internet and were extensively used mainly for the introductory section and the literature review.

Method of Data Analysis

The data from the study was analyzed with both descriptive and inferential statistics. The descriptive statistics was used to analyze the four objectives formulated. The descriptive tools include likel-scale measures of five points with threshold (mean) of 3.0. That is any variable that is equal or greater than 3.0 will be considered positive than while those lower 3.0will be negative. Also percentages, frequency tables and mean were employed as part of descriptive statistics.

Analysis of variance (ANOVA and its F-value, at 5% of significance was the inferential statistic applied to compare the annual income of the fisherman before and after joining the fishery cooperative societies.

RESULTS

Socio-economic Characteristics of the Fishermen

The socio-economic characteristics of the fishermen are presented in Table 1 below

Table 2: Distribution of Fishermen by Socio-economic Characteristics

Socioe-conomic factors	Frequency (n = 360)	Percentage %	Mean (x)
Sex:			
Male	269	74.7	
Female	91	25.3	
Age:			
Less than 20 years	79	21.9	
21 – 50 years	162	45	40.3
51 – 70 years	107	29.7	
71 years and above	12	3.4	
Education Level:			
Zero year of formal education	54	15	
FSLC (1 – 6 years)	189	52.5	
SSCE (7 – 12 years)	94	26.1	
OND/NCE (13 – 14 years)	12	3.3	
BSc/HND	11	3.1	
Marital status:			
Single	73	20.3	
Married	243	67.5	
Widow/widower	44	12.2	

Household Size: (Persons)

1 – 2 Persons	86	23.9	
3 – 5 Persons	197	69.7	4
6 – 10 Persons	77	21.4	
11 – 20 Persons	-	-	
Above 20 Persons	-	-	
Alternative Job of Fishing;			
Full time fishing (1)	295	81.9	
Part time fishing (0)	65	18.1	
Fishing Experience (Years):			
Less than 1 year	65	18.1	
1 – 5 years	102	28.3	
6-10 Years	182	50.6	6.2
11 – 20 years	11	3.0	
Scale of Fish Production:			
Small (0)	242	67.2	
Large (1)	118	32.8	
Fish Production Timing:			
Full tide movement	86	23.9	
Low tide movement	71	19.7	
No moon light	99	27.5	
Full moon light 104	104	28.9	
Income Generated from Fish Production Annually in Naria			
Less than 100,000	48	13.3	
100,000 – 200, 000	92	25.6	
200,001 500,000	105	29.1	415,778
500, 001 – 1000,000	95	26.4	
Above 1,000,000	20	5.6	
Distance/Area Covered During Fishing			
1 – 5 S1 mile	86	23.9	
6 – 10 Sq mile	125	34.7	
11 – 20 Sq mile	89	24.7	11.5Sq Mile
21 Sq mile and above	60	16.7	

Source: Field Survey, 2015

Table 2 shows the distribution of the socio-economic profile of the respondents which revealed that more males (74.7%) were into fish production than females (25.3%) and the fishermen were averagely in their middle ages (40.3 years). On the average, the majority of the fishermen were literate as a good number (52.5%) of them had (FSLC). Most (67.5%) of the respondents were married, with average family size of 4 members. The Table indicated that the respondents were full time (81.9%) fishermen, and with average experienced of 6 years. The Table also showed that the respondent's scale of production fish is in small-scale (67.2%). Different fish production timings (full tide, low tide, no moon, full moon)were explored by the respondents and their average annual income stood at ₦415,778, as well cover averagely11.55sq miles of fishing areas.

Services Rendered by Fishery Cooperatives to Fishermen (members)
Table 3: Distribution of Fishermen by Services Rendered by their Fishery Cooperatives

	Possible Services of Fishery Cooperative	Std. Deviation	Mean (x̄)	Decision
1	Supply of fishing materials e.g net, hook, trap, bait, etc	.9881635	3.98	Agreed
2	Hiring services on fishing equipment e.g boat, engine, etc	1.007841	3.61	Agree
3	Provision of credit facilities	.0889762	3.28	Agree
4	Provision of storage facility	.632492	4.68	Agree
5	Processing of fish	1.447528	2.66	Disagree
6	Renders extension services on modern method of fishing	.7853436	4.07	Agree
7	Collective marketing of members fish	.4752284	3.85	Agree
8	Educational service e.g adult education	1.008436	3.08	Agree
9	Renders advisory services on fishing safety	.8804644	4.37	Agree
10	Enlighten fishermen on the benefits of personal hygiene and family health	.9326661	4.48	Agree
11	Provide fishing regulations that regulates the fishing activities of the fishermen	1.006440	2.86	Disagree

Source: Field survey May, 2015

Table 3 above reveals the responses of the fishermen on the services rendered to them by their cooperative societies. Out of the eleven (11) possible services listed, nine (9) had means above 3.0. This implies that the 9 service as indicated on the table are those being rendered. The only two (2) services not being rendered includes processing of fish (2.66); and, provision of regulation on fishing activities of the fishermen (2.86). With most of (75%) of the members being men, it's not surprising that fish processing which is mainly female activity is not emphasized. Regulatory activities also are usually the responsibility of the state or Federal Ministry of Agriculture and Water Resources.

Effect of Membership of Fishery Cooperatives on the Income of Fishermen
The fishermen views on the effect of membership of fishery cooperatives on their income are being presented below;

Table 4: Annual Income of Farmers before and after Joining Fishery Cooperatives

S/N	Annual income earned (Naira)	Before obtaining fishery cooperative membership		After obtaining fishery cooperative membership	
		frequency N = 360	Percentage	Frequency N = 360	Percentage
1	Less than 100,000	78	21.7	32	8.9
2	101,000 – 200,000	245	68.1	64	17.8
3	201,000 – 500,000	30	8.3	107	29.7
4	501,000 – 1,000,000	7	1.9	123	34.2
5	1,000,001 – 2 million	-	-	32	8.9
6	2.1 million – 5 million	-	-	2	0.5
7	Above 5 million	-	-	-	-

Source: Field Survey, 2015

Table 3 reveals that the maximum range of income earned by the fish farmer per annum before joining cooperative was 501,000 to 1,000,000 naira, while the annual income of the respondent increased when they joined cooperative to the extent that 2 persons earned between 2.1 million to 5 million.

Test of Hypothesis (Ho₃)
Ho1: Membership of fishery cooperative would not significantly enhanced the income of the fishermen.

Table 5: Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	9.511	2	4.256	12.161	.000
Within groups	54.9000	147	.380		
Total	64.411	149			

Source: Field Survey, 2015

The Analysis of Variance in Table 5 revealed an F value of 12.161 which is greater than the tabular value (3.00) and significant at 0.05 (5%) level of significance. Therefore, the null hypothesis was rejected and the alternate hypothesis was accepted which states that being a member of a fishery cooperative has significantly enhanced the income of the fishermen. The result further support Bako and Ahmed(2011), study that showed that both the aquaculture and inland fish production were enhanced by the activities of fishermen cooperatives in the Kainji lake basin of Nigeria.

Challenges Faced by Fishermen in the Course of Fish Production
The identified challenges militating against fishery in the study area is presented in Table 5 below;

Table 6: Distribution of Fishermen on the Challenges Faced

S/N	Possible challenges	Std. Deviation	Mean (X)	Decision
	River-related			
I	Pollution	.88862	4.63	Agree
ii	Non availability of fish	1.0298	3.27	Agree
iii	Non availability of fishing area	.06322	3.33	Agree
iv	Fish-related diseases	2.0315	2.48	Disagree
V	Climate change and bad weather condition	.6488	4.63	Agree
	Financial related			
vi	Lack of fund	.0946	4.08	Agree
vii	Lack of collateral for loan	1.0843	3.74	Agree
viii	Ignorance of loan facility	1.066	3.58	Agree
ix	Unfavorable government policies	.8733	4.14	Agree
	fishing related	1.0061	3.59	Agree
x	Poor extension service			
xi	Non-Availability of labour support	.8441	4.42	Agree
xii	Long Distance of fishing	.6825	3.37	Agree
xiii	Strength of fish surviving	1.0441	3.66	Agree
xiv	Fish preservation problem	.6601	3.92	Agree
xvi	Tsetse fly challenge	1.0463	3.04	Agree
xvi	High cost of fishing tools materials	.8801	4.37	Agree
xvii	Poor storage facility	.6244	3.46	Agree
xiiii	Lack processing facility	.5721	3.04	Agree
xix	Poor distribution and market channel	.6903	3.84	Agree
	Grand mean		**3.7152**	**Agree**

Source: Field Survey, 2015

The result of Table 6 revealed a 5 points likert-scale analysis with the weighted mean of 3.0 and above as criteria for agreeingas and less than 3.0, as criteria for disagree is a possible challenges. Based on the results, the grand mean (x = **3.7152**) implied that fishermen are been faced with challenges they range River-related (i,ii,iii & v); Financial-Related (vi-ix); and Fishing-related (x-xix)

CONCLUSION
Summary of Findings
The study appraised the performance of fisheries cooperative societies in Rivers State. On the average, the majority of the fishermen were enlightened as good number of them spent 12 years in school to obtain SSCE. Also, majority of the respondents were married with family size of 3-5 members. The respondents are full-time fishermen and were adequately experienced. The respondents produce fish in a small-scale. Different fish production timings were explored by the respondents who earned varying income, ranging from 100,000 to 1,000,000 naira per annum and covered relatively wide range of fishing areas.

The findings also revealed that the income earned from fishing by the respondents before joining cooperatives was lower compared to after they joined cooperatives.

Finally the findings revealed that fishermen were faced with various degrees of challenges in three major areas of which are river-related, financial-related or fishing-related.
Based on the study the fishery cooperative societies have indeed performed reasonably in boosting the performance of their members in fish production in Rivers State. However, to further enhance their support to the fishermen; it is recommended as follows:

1. Fishermen in Rivers State should endeavour to engage in group fish farming through the formation of cooperative societies as the study revealed that the income generated by members of such cooperative was higher compared to when they hadn't joined cooperatives.
2. Fishermen should be encouraged to use modern facilities to improve their catch. With the introduction of modern equipment, it will enhance fishermen productivity and improve their income.
3. The government should provide basic education for these fishermen and their households. This will enable them manage their fishing business effectively and facilitate the adoption of modern technologies in fish production.
4. Government should provide social infrastructure that will enhance fish storage such as electricity to help reduce some of the challenges the fishermen encounter in fish production.
5. Ways of involving women in fish production should also be sought.
6. Financial institutions should support the fishermen with credit facilities to boost their fish production.

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