Influence of Socio-Economic Characteristics of Artisanal Fisher Folks on Fish Output in Ughelli South, Delta State, Nigeria

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Abstract

The influence of socio-economic characteristics of artisanal fisher folks on fish output in Ughelli South Local Government Area, Delta State, Nigeria was studied from May to July, 2016. Data related to socio-economic indices of the fisherfolks were obtained through a validated structured questionnaire and were subjected to descriptive statistical analysis and multiple regression analysis. The results showed that fishing was the main profession of the active young persons, and that the educational level of fisherfolks was relatively high in the area. More of the fisherfolks (71.3%) were males while 28.7% were females and were within the active age distribution of 25 – 35years (37.2%) and 36 – 46years (35.1%). Fisherfolks with formal education were 56.4%, most (69.1%) were married; the family size of 0-4 persons was 67.0%, while 47.9% had 6 - 11year fishing experience. Monthly output ranges of ₦10,000-₦60,000 and ₦70,000-₦120,000 were 42.6%. Constraints faced by artisanal fisherfolks included high costs of fishing gears, poor processing facilities, lack of transportation, poor marketing facilities, low income from poor catch and inadequate storage facilities. If the fishery facilities of the area are improved upon, it could help towards employment generation, poverty alleviation and supply of fish protein to the teeming Nigerian population within the study area and beyond.

Keywords: Socio-economic, characteristics, artisanal, fisherfolks, fish output, Ughelli South, Delta State.

Introduction

Fishing is an ancient human tradition. It is a traditional activity involving the hunting and gathering of aquatic products for food. Fish is economically, socially and culturally important as a global dietary aspect of sustainable food security. Fish production in Nigeria has been by capture and artisanal fisheries and recently by aquaculture production. At present, fish production by artisanal fishers dominates fish production in Nigeria. Jacquet and Pauly (2008) defined artisanal fishing as small-scale fishing for subsistence or local small markets, generally using traditional fishing techniques and small boats. Several attempts were made over the years to boost the productivity of artisanal fishers through institutional reforms with various fiscal and economic measures. Despite these interventions in the development plans, the fisheries sector still showed a deficit in the supply and demand of fish to Nigerians. Fish demand in Nigeria is estimated to be about 1.3million metric tons, but the annual fish consumption was estimated to be 2.6million metric tons (Ogundiwin, 2014). This inadequacy in fish supply may have translated to high prices of fish, with artisanal fisheries accounting for almost 85% of total

local fish production. Artisanal fisheries therefore contribute significantly to sustainable livelihoods of people in several ways.

Fish production is hampered by a litany of problems amongst which are relatively high costs of fishing gears, use of dangerous chemicals in natural waters to kill fish, manpower shortages in the key areas, capacity under-utilization and faulty planning with attendant short-lived policies by government, lack of finance, lack of storage facilities, and marketing problems (Anene *et al*., 2010).

In Nigeria, there is an on-going quest for improved fishing techniques and gears to replace the low-yielding traditional fishing methods. Fish farming through aquaculture techniques and/or artisanal fishing still remain the viable means for increasing fish production in order to meet the protein needs of the people. This research is an assessment of the socio-economic characteristics of artisanal fisherfolks in Ughelli South, Delta State of Nigeria as it affects fishing output, and the constraints militating against artisanal fishing operations in the area of study.

Materials and Methods

Description of Study Area

The study was carried out in Ughelli South Local Government Area (L.G.A) of Delta State, Nigeria. Ughelli South L.G.A. has an area of 786km^{2}and a population of 213,576 by the 2006 census, and lies between latitude 5^{0}30$^{'}$ and 9^{0}45$^{'}$N and between longitude 5^{0}57$^{'}$ E and 8^{0}43$^{'}$ E (Wikipedia, 2016). Ughelli South L.G.A is made up of six clans, namely: Olomu, Eghwu, Okparabe, Arhevba-Irien, Effurun-Otor and Ughievwen clans. The six clans are made up of 71 villages. Ughelli South consists of gentle sloping, mainly riverine, upland and inland areas, and is traversed by the River Niger, flowing streams and rivers that empty into the western coast of the Niger Delta. The major occupations of the inhabitants are fishing and farming.

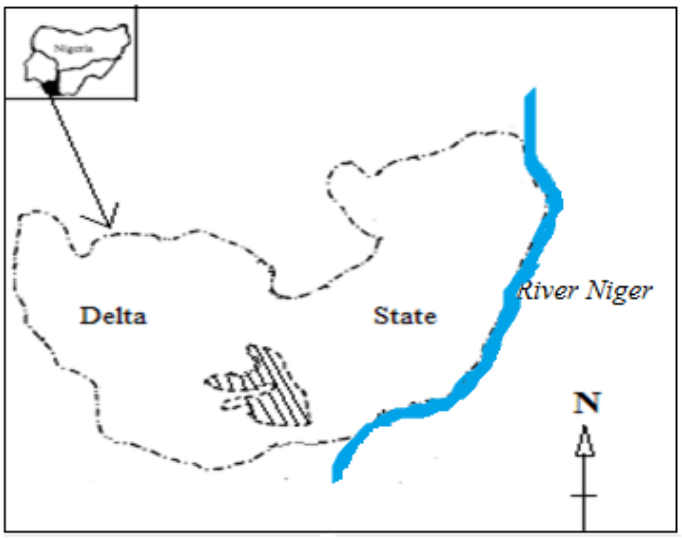

Figure 1. Map of Delta State of Nigeria showing study area, Ughelli South L.G. A. (shaded)

Sampling

The study was conducted in three months from the month of May 2016 to July 2016.Multi-stage random sampling was used in the study as explained below:

Stage I: Four clans (Olomu, Arhevba-irien, Ughievwen and Eghwu) were purposively selected based on the presence of water bodies like River Niger, Forcados river and Okpare creek, which encourages fishing activities in the areas.

Stage II: One community each (Okpare, Arhavbarien, Egbo-Ideh and Okwagbe waterside) was selected randomly from each of the four clans in Stage I respectively.

Stage III: Twenty five fishermen were selected as respondents from each of the four communities for study giving a total of 100 respondents.

Collection of Data

Data for the study were collected through the administration of validated structured questionnaires to the artisanal fisherfolks respondents in the area of study. Filling of questionnaires was done with the guidance of the researcher in order to limit possible errors as arising from fisherfolks not understanding the questions being asked. Those deficient in writing provided their answers orally while the researcher assisted them in filling the forms. The questionnaire provided information on socio-economic characteristics of respondents such as age, gender, family size, income level, economic status, level of education, fishing experience, types of gears used for fishing and constraints encountered by artisanal fisherfolks. The structuring of the questionnaire allowed for both fixed alternatives and open-ended questions for increased efficiency in data collection.

Statistical Analysis

Descriptive statistics were used to describe the socio-economic characteristics and constraints encountered by artisanal fishers, and multiple regression analysis used to determine the various socio-economic factors affecting the income of artisanal fishers in the area. The multiple regression analysis was done by first stating the regression model implicitly in an equation form, as used by Udoh and Nyienakwuna (2008):

$Y = f(X_1,X_2,X_3,X_4,X_5,X_6,X_7,X_8,X_9,X_{10},E)$

Where: Y = Output (catch) of fish, in Nigerian naira (₦)
X_1 = Age (in year) of farmer
X_2 = Gender of farmer
X_3 = Family size
X_4 = Education (years)
X_5 = Fishing experiences (number of years)
X_6 = Cost of fishing inputs (₦) such as paddles, boat repairs, net repairs, storage, transportation e. t. c
X_7 = Cost of capital inputs (₦) such as boats, engines, gears and accessories.
E = Random Error

Three functional forms of the model: linear, semi-log and double-log functions as used by Almeida *et al*. (2001) were used for the analysis. The one with the best fit was used as the lead function based on economic, statistical and econometric criteria as well as *a priori* expectations.

Results

The socio-economic characteristics of fisher folks based on 94 questionnaires returned are presented in Table 1.Out of the 94 respondents, 67 (71.3%) were male, and 27 (28.7%) were female. Fisher folks with formal education were 56.4%, most (69.1%) of whom were married; family size of 0-4 persons was 67.0%, while 47.9% had 6 - 11 years fishing experience. Output level of 42.6% on monthly was observed to range between ₦10,000 and ₦60,000 and between ₦70,000 and ₦120,000.

Table1: Socio-economic characteristics of artisanal fisher folks

S/N	Variables	Frequency	%	Mean	S/N	Variables	Frequency	%	Mean
1.	**Gender**				**4.**	**Marital Status**			
	Male	67	71.3			Married	65	69.1	
	Female	27	28.7			Single	23	24.5	
						Divorced	2	2.1	
						Widowed	4	4.3	
	Total	**94**	**100**			**Total**	**94**	**100**	
2.	**Age (Years)**				**5.**	**Family Size**			
	25-35	35	43.6			0-4	63	67.0	
	36-46	33	30.9			5-9	25	26.6	
	47-57	21	22.3			Above 9	6	6.4	
	Above 57	5	3.2						
	Total	**94**	**100**			**Total**	**94**	**100**	4 Persons
3.	**Level of Education**				**6.**	**Fishing Experience**			
	No formal education	41	43.6			0-5 years	11	11.7	
	Primary education	29	30.9			6-11 years	45	47.9	
	Secondary education	21	22.3			12-17 years	31	33.0	
	Tertiary education	3	3.2			Above 18 years	7	7.4	
	Total	**94**	**100**			**Total**	**94**	**100**	10 years
7.	**Output (₦)**								
	10,000-60,000	40	42.6						
	70,000-120,000	40	42.6						
	130,000 and above	14	14.9						
	Total	**94**	**100**	₦ 89,521					

Table 2 shows the multiple regression analysis on the influence of socio-economic characteristics on fishing output. The double – log regression function was chosen as the lead equation based on the value of R^2 (0.601), F – ratio value (18.502) and the highest number of significant variables (four variables). The coefficient of multiple determinations (R^2) was found

to be 0.601 which implies that 60.1% of the variables in the output were explained by the socio-economic characteristics fitted into the model while approximately 39.9% was accounted for due to the error term (E_1). The F – ratio of 18.502 implies that the overall equation is significant (P<0.10). Analysis of the various variables in the model reveals that education and fishing experiences with co-efficient of 0.046 and 0.189 respectively were significant (P<0.10) on their effect on the dependent variables while cost of fishing inputs and cost of capital inputs with coefficients of 0.212 and 0.474 respectively had highly significant (P<0.01) effects on the dependent variable.

Table 2: Double – Log Regression Result on Influence of Socio-economic Characteristics on Fish Output

Variables	Coefficient	Standard Error	T-value	Significance
Constant	5.027	1.049	4.794	0.000
Age	-0.270	0.216	-1.252	0.214
Gender	0.006	0.020	0.301	0.764
Family size	-0.019	0.075	-0.257	0.798
Education	0.046	0.024	1.877	0.064*
Fishing Experience	0.189	0.101	1.870	0.065*
Cost of Fishing Inputs	0.212	0.509	3.596	0.001**
Cost of Capital Inputs	0.474	0.060	7.845	0.000**

Dependent variable: Output(Y); $R^2 = 0.601$; F- Ratio =18.502
*Significant at P<0.10, ** Significant at P<0.01

On constraints encountered by artisanal fisher folks in the area of study, results obtained show that 90.5% of respondents identified high costs of fishing gears as their major problem. Respondents also identified low income from poor catch (96.8%), inadequate processing facilities (66.3%) inadequate marketing facilities (14.7%) and poor transport (44.2%) while 63.2% of the respondents identified lack of storage facilities as their major constraints encountered in their fishing operations (Table 3).

Table 3: Constraints associated with artisanal fishery activities.

Constraint	Frequency	Percentage
High cost of Fishing Gear	86	90.5
Low income from past catch	92	96.8
Processing facilities	63	66.3
Marketing facilities	14	14.7
Transport	42	44.2
Inadequate storage facilities	60	63.2

Discussion

The analysis of socio-economic characteristics of respondents showed that fishing activities were dominated by the males in the area, which is in line with earlier report of Ele (2008). Age, education and marital status were important socio-economic characteristics in this study

because they affected productivity and fishing output. The respondents were within the productive and economically active age, and were able to increase fish catch and improve livelihoods of the families (Okeowo *et al.,* 2015). High levels of education and marital status had positive relationships with the output of the artisanal fisherfolks as they contributed significantly to decision-making, yield/output, efficient marketing and sustainable fish production. Ayotunde and Oniah (2012) observed that the marriage institution is still appreciated as a sign of economic responsibilities.

Household size of respondents was 4 persons on the average. This finding was not significant and therefore implies that output of fisher folks did not depend on the family size. However, the relatively small household size may have increased the labour required, since fishing activities depend on family labour which may result in reduced costs and increased profits. Adegbite and Oluwalana (2004) reported that the more the household size, the more the possibility for labour efficiency on fisher folks. Fish farming with 6 to 11yearsexperience were the most abundant in this study. Olaoye *et al.,* (2013) noted that good skills and better approaches to fish farming business are expected with more years of experience while those with less years of experience may face many risks in the early days of their fish farming business. Most respondents earned output ranging between 10,000 and 60,000 Nigerian naira (₦) and between ₦70,000 and ₦120,000 per month. This result is in agreement with earlier findings that fish business is profitable according to the level of investment and variable cost minimization (Elhendy and Alzoom, 2001; Yesuf *et al.,* 2003; Ajao, 2006; Kudi *et al*., 2008; El-Naggar *et al.,* 2008; Adewuyi *et al.,*2010; Kassali *et al*., 2011).

On constraints of fisher folks, low income from poor catch was a major problem because artisanal fisherfolks in the study area had been experiencing decline in fish output over the past few months as a result of seasonality of water volume. Other constraints identified were high costs of fishing gears, inadequate processing and storage facilities, poor transport (bad roads), and marketing problems. These constraints are in line with the studies of Clark *et al*. (2005), Anyanwu *et al.* (2009), Ayotunde and Oniah (2012), Olaoye *et al.*(2013) and Okeowo *et al.* (2015).

Conclusively, this study shows that most of the fisher folks were males within the economic active range of 25 – 46years. Majority of the fisher folks were married and highly experienced in fishing because of family inheritance. Attention should be given to reducing the high costs of fishing gears, improving low income from poor catch, providing more processing, storage and marketing facilities cheaply to fisher folks, as well as building more transport infrastructures in order to reduce the current hindrances in the fishing environment. The study recommends that fisheries extension services be intensified with adequate programmes that will encourage improved fishing practices with reduced losses.

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