

## Prospects and constraints of artisanal fishing in selected communities in Delta State, Nigeria

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### ABSTRACT

*The study addressed three issues: the prospects and constraints of artisanal fishing in selected riverine communities in Delta, and relationship between demographic characteristics of respondents and their economic returns. To achieve this, data were collected from 92 fisher folks and analyzed using frequency distribution, percentage, mean and multiple regression analysis. Result showed that the average earning of the respondents was ₦24, 456.52 per month. The major impediments to artisanal fishing were high cost of fishing inputs with a mean score of 3.81, insufficient capital (3. 72), storage problems (3. 63), spoilage of fish caught (3. 55) and poor catch (3 .53). Age ( $b= -0.102$ ), sex ( $b=0.329$ ) and household size ( $b= 0.166$ ) of the fisher folks has significant influence on income. The study recommends improving farmers' access to cheap credit and mobilizing their savings to ameliorate the constraints imposing by inadequate finance as well as providing a joint cold storage facility in the communities.*

**Key Words:** Artisanal fishery, Delta state, constraints, income.

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### INTRODUCTION

The Nigeria fishery sub- sector plays in important role in the socio – economic development of the economy. According to Eyo (1992) and Akeredolu (1990), the sector serves as an income source, facilitates the development of cottage industries and provides employment opportunities for the myriad of people engaged in fishery production, processing and marketing. It equally serves as an important protein supplement to meat protein, more so because of the persistent rise in cost of meat ( Oladedji and Oyesola, 2002).

With a water area of 523,400 metric tones (Ajayi and Talabi, 1984), the potential of the fishery sub – sector to expand exist in Nigeria. Artisanal fishery is critical to the attainment of increased fishery activity in the county. Onefeghara (1990) observes that it accounts for about 500,000 - 510,00mt of the estimated 800,000mt if domestic fish production in the country. This represents about 63 – 64 %. However, domestic fish supply lags behind demand due largely to increased population and high cost of mean (Oladedji and Oyesola, 2002). The authors observed that a government attempt to improve fish supply in the country by importation failed. A more appropriate measure would be to increase domestic fish supply through encouraging artisanal fishery.

An understanding of the social and economic aspects of fish production and the interaction between both variables is a pre – requisite to the future development and sustainability of the sector (Towusley, 1991; Akpopko, 2003). Furthermore, an understanding of the constraints limiting the growth and development of the sector is vital for the successful development of policies or programmes aimed at improving the performance of the sector. Of concern to us in this study therefore are the following questions: what are social characteristic of fisher folks in the study area; what are their production practices; what constraints do they face? The study therefore seeks to achieve the following specific objectives:

1. To identify the type of people engaged in artisanal fishing in the study area.
2. To ascertain the financial returns of artisanal fishing.
3. To ascertain the production constraints associated with artisanal fishing farming.
4. To examine the production practices used by the fisher folks.

### **Hypothesis of the study**

The null hypothesis tested in this study is:

Ho: there is no significant relationship between fisher folks' personal characteristics and their financial returns

### **Methodology**

The study was conducted in selected riverine communities in Isoko South Local Government Areas (LGAs) of Delta State, Nigeria. The area is noted for its fishing activity. There are ten communities in the LGA of which 5( Aviara, Ibedeni, Uzere, Igbide and Emede) was sampled through simple random sampling techniques. Forty artisanal fishery farmers were further selected from each of the five communities through simple random procedure. Data were collected by means of a structured interview schedule pre-tested on fisher folks means in communities not included in the final sample. The schedule was validated by experts in Fisheries and Agricultural Extension. The schedule elicited responses on issues relating to respondents demographic characteristics, financial or economic returns and fishery constraints. Data collection was facilitated through trained enumerators. Only 184 copies of the administered instrument were found useful for data analysis. The remaining 16 were either not filled or never returned.

Data analysis was accomplished using frequency distribution, percentage, mean, t test and multiple regression statistics. The explicit regression model tested is of the form:

$$Y = a + b_1 X_1 + b_2 X_2 + \dots + b_n X_n + e$$

Where:

Y = depend variable ( income realized from sales of fish)

X<sub>1</sub> = sex ( dummy variable : male = 1, female = 0 )

X<sub>2</sub> = Education ( dummy: no formal school = 0; have formal school education = 1)

X<sub>3</sub> = household size ( number of people living and feeding together )

X<sub>4</sub> = Experience in artisanal fishing ( measured in years )

X<sub>5</sub> = Age (years)

e = error term

a = constant term

b = coefficients

### Variable measurement

*Fishery constraints*: to identify and assess the seriousness of the fishery constraints encountered by respondents, a five – point Likert scale types was used. The scale ranged from ‘ Very serious’ with a score of 5, ‘ serious ‘ = 4 undecided = 3, ‘ not serious’ = 2 to ‘ not very serious ‘ = 1. A factor is considered serious when it’s mean score  $\geq 3.00$  and otherwise if it was  $\leq 3.00$ . The weighted score of 3.00 was determined as follows:  $[(5+4+3+2+1) \div 5]$ .

## RESULTS AND DISCUSSION

### Personal characteristics of respondents

Table 1 shows that majority (90. 2 %) of the respondent were males, while the remaining 9. 8 % were females. The dominance of male in artisanal fishery sub – sector has been reported by Akpoko (2003). The risk associated with such off – shore fishing activities may be responsible for the low female participation in the activity. It is also evident from Table 1 that 51. 1 % of the respondents had primary education, while 18.5% had secondary education. The remaining 30.4 % had no formal education. This implies that artisanal fisher folks have a low educational background. The low educational status of the respondents may influence their acceptance of improved fisher practices. The positive influence of education on farmers’ acceptance of improved farm practices has been established by several studies ( Onemolease *et al*, 2000; Tshionza, Lemchi and Uloma, 2001).

Majority (53.3%) of the respondents had a family size of 5 – 8, while 39.1% had a family size of 9 – 12. Only 7.6% of 1 – 4. The average household membership was 7, and implies that artisanal fisher folks have large household Large household constitutes an important labour source for farmers.

Table 1 also indicate that 35.9% of the respondent had been involved in artisanal fishery for 31 – 40 years while 34..8% had a fishery experience for 21 – 30 years, about 20% had an experience of 11 – 20 year, while only 8.7% have 1 – 9 years experience in the business. The average fishery experience of the respondents was 24 years, which implies that they are experienced in this activity. Majority (42.4%) were between 55 – 74 years old, 22.8% were 35 – 54 years while 18.5% fell within the bracket of 25 - 34 years. Only 13% and 3.3% were above 74 and less than

25years old. The average age of the respondents was 44 years, which suggests that artisanal fishery in the study area is dominated by the elderly. Most (76.1%) respondents engaged in other economic activities aside from fishing since they were not full-time fisher folks. The remaining (23.9%) were engaged fully in artisanal fishery. The fact that most respondents combined fishing with other economic activities suggests their need to augment income from artisanal fishery with income from other sources. This probably was an indication of their dissatisfaction with income derived from their fishing activity.

**Table 1: Characteristics of artisanal fisher folks (n = 184)**

<b>Characteristic variable</b>	<b>No</b>	<b>%</b>	<b>Mean</b>
<b>Sex</b>			
Male	166	90.2	
Female	18	9.8	
<b>Education</b>			
None	56	30.4	
Primary	94	51.1	
Secondary	34	18.5	
<b>Household size</b>			
1 – 4	14	7.6	
5 – 8	98	53.3	7
9 – 12	72	39.1	
<b>Fishing experience (years)</b>			
1 – 9	16	8.7	
11 – 20	38	20.6	24
21 – 30	64	34.8	
31 – 40	66	35.9	
<b>Age (years)</b>			
5 – 24	6	3.3	
25 – 34	34	18.5	
35 – 54	42	22.8	44
55 – 74	78	42.4	
75 – 94	24	13.0	
<b>Full time fishing</b>			
Yes	44	23.9	
No	140	76.1	

### Monthly income range of respondents

Table 2 shows the income distribution of the respondents. Majority (33.7%) had an income range of ₦20,000 – ₦29,999, 21.7% had an income of 10,000 – 19,999 naira, 17.4% had an income of 40,000 – 49,999 naira, while 15.2% had an income of less than 10,000 naira . Only 12% had an income of 30,000 – 39,999 naira. The mean income was ₦24, 456.52 (i.e 174.69 US Dollars at 1 Dollars to 140.00 naira). An average income of ₦38,312.5 (273.66 US Dollars) was reported among fisher folks in Katsina state of Nigeria (Akpoko, 2003). Difference in amount of fish caught and/or price of fresh fish may account for this difference

**Table 2: Financial returns of respondents (n = 184)**

Income (₦)	No	%	Mean
< 10,000.00	28	15.2	
10,000 – 19,999	40	21.7	
20,000 – 20,999	62	33.7	24,456.52
30,000 – 40,999	22	12.0	
40,000 – 40,999	32	17.4	

\*174.69 US Dollars ( assuming an exchange rate of 1US Dollars=140.00 naira)

### Fish production practices of respondents

Table 3 shows that 55.45 of the respondents make use of drifts nets, 50% webbing nets, 45.7% used cast nets, while only 5.4% used clap nets. None of the respondents (100%) used motorized boat, which implies that they were all using canoes. This may be because of high cost involved in the purchase of such an input.

**Table 3: Fish production practices of respondents**

z	Y	
	Number*	Yes %
Drift nets	51	55.4
Webbing nets	46	50.0
Cast nets	42	45.7
Clap nets	5	5.4
Motorized boats	-	-

\*Multiple response

### Fish production constraints

Table 4 reveals that fisher folks in the study area faced five major constraints in their fishing activities. These were high cost of fishing inputs such as motorized boats with a mean score of 3.81, insufficient capital (mean = 3.72), storage problems (mean = 3.63), spoilage of fish caught (mean = 3.55) and declining quantity of fish catch (x = 3.52) Studies by Oladeji and Oyesola (2002) confirms the seriousness of such constraints as high cost of fishing materials among fisher folks, low income arising from poor catch and storage problems. Insufficient capital limits farmers' investment profile worsened by an already high cost of inputs. While poor catch may pose a serious limitation to economic returns of respondents, spoilage of fish due to lack of proper storage facilities, may aggravate their poor condition of living.

**Table 4: Constraints encountered by respondents**

Constraint	Mean
High cost of fishing inputs	3.81*
Lack of sufficient capital	3.72*
Storage problems	3.63*
Spoilage of fish	3.55*
Poor catch	3.52*
Poor sales	2.66
Oil/industrial pollution	1.56

### Relationship fisher folks' characteristics and income

Table 5 shows the nature and magnitude of the relationship that existed between the respondent's demographic characteristics and their financial returns from artisanal fishing. The computed F value (3.63) shows the model was significant ( $p < 0.05$ ), while the explanatory variables accounted for about 40% ( $R^2 = 0.391$ ) variation in income earnings of the respondents. Age (-0.102), sex (0.329) and household size (0.116) were significant ( $p < 0.05$ ) variables influencing respondents income level. The negative value of age suggests that younger farmers earned significantly more than older farmers. This may be explained by the fact that younger fisher folks are more energetic than older ones and are therefore able to catch more fish than their older counterparts. The positive coefficient for sex means that male fishermen realized significantly higher income than the fisher women. The positive coefficient for household suggests that larger household earned more farm income than smaller household. It is possible that larger household have greater access to family labour.

**Table 5: Relationship between respondents' characteristics and income earned from artisanal fishery (multiple regression)**

Explanatory variables	Coefficient	t value
Sex	0.329*	3.193
Household size	0.116*	3.205
Age	-0.102*	2.749
Education	0.017	1.003
Fishing experience	0.004	1.911
$R^2$	0.371	
F calculated	3.63**	
Standard error	1.31	

\*Significant ( $t = 2.02$ ;  $p < 0.05$ ); \*\*Significant ( $F = 2.49$ ;  $p < 0.05$ )

### Conclusion and recommendations

Artisanal fishing in the study area showed economic prospect. However, the economic potential of the enterprise was constrained by several factors notably high cost of fishing inputs such as motorized boats, insufficient capital, storage problems, spoilage of fish caught and declining catch. To enhance the economic potential of artisanal fisher folks, the authors proposed the following recommendations:

1. Fisher folks in the community should be encouraged to mobilize or pool their financial resource in order to ameliorate the constraints imposed by lack of or inadequate finance.
2. To reduce fish spoilage cold storage facilities should be provided in the communities. This can be jointly owned and/or controlled by the fisher folks.
3. Efforts should also be made to provide the fisher folks with motorized boat. This will enhance the quantity of fish caught.

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