**Analysis of Factors Affecting Artisanal Fisheries along selected water bodies of Cross River, Cross River State, Nigeria**

**ABSTRACT**

The study on the analysis of factors affecting artisanal fisheries along the selected water bodies of Cross River at Ahaha, Inangha and Okpon in Obubra, Cross River State, Nigeria examined the effects of socio-economic characteristics of the artisanal fish farmers, fishing gears and crafts on fish harvested in the study area. The study specifically determined the variables of socio-economic characteristics of age, gender, marital status, household size, household income and fishing experience as well as fishing materials such as net, hooks, number of canoes, baits, and age of fishing gears as they affect output of fish-catch in the study area by the artisanal fishers. The study also investigated some constraints that affect artisanal fishers in fishing activities in the study area and suggested appropriate recommendations based on the research findings. The socio-economic characteristics of the artisanal fishers showed that 81% of the artisanal fishermen were male, while 19% were female, the average age of the fishermen was 30 years, average household size was 5 persons and the average fishing experience was 8 years. The results of the regression analysis on the effects on fish catch showed that gender was significant at (P>0.05) level, household income, level of education and fishing experience were all significant at (P>0.01) level. Cost of fishing net and age of fishing gears were significant at (P>0.05) level, while cost of baits, number of canoes and number of times in fishing had negative coefficients with the quantity of fish catch in the area. The Likert scale rating, revealed that drying up of rivers during dry season (3.32), difficulties to access fishing points along the rivers (3.21), excessive rainfalls during raining season (3.06), high costs of canoes for fishing (3.00), lack of extension services to educate artisanal fishermen (2.94), high cost of fishing nets (2.80), non-availability of baits (2.70), non-availability of good hooks for fishing (2.67) and inadequate processing facilities (2.64) were all reported to constitute constraints in fishing activities in the area while lack of market for the fish caught (2.05) was not a problem. The study recommends that artisanal fishermen should be regularly trained in modern fishing techniques while the costs of fishing gears and crafts be subsidized by the government to the artisanal fishermen in the study area.

KEY WORDS: Artisanal fishing, water bodies, constraints, Cross River State

**INTRODUCTION**

“The fisheries sector of agriculture plays an important role in the process of economic development of any country. The sector provides food for human consumption, raw materials for industries and also serves as a source of foreign exchange earnings” (Ifabiyi, Adisa, Komolafe and Awarun (2023). “Global capture fisheries production of aquatic animals has fluctuated between 86 and 94 million tonnes per year since the late 1980s” (Falola, Mukaila, Olonade, Adeshina, Adewale, 2022). “In 2022, the sector produced 92.3 million tonnes, valued at about USD 159 billion and comprising 91.0 million tonnes of aquatic animals – 79.7 million tonnes caught in marine areas and 11.3 million tonnes in inland waters – in addition to 1.3 million tonnes of algae. China remained the top captured fisheries producer (14.3%), followed by Indonesia (8.0%), India (6.0%), Peru (5.8%), the Russian Federation (5.4%), the United States of America (4.6%), Viet Nam (3.9%) and Japan (3.2%)” (FAO, 2024). Also, “in 2022, global apparent consumption of aquatic animal foods reached an estimated 165 million tonnes, increasing at nearly twice the annual rate of the world population since 1961. Global annual per capita apparent consumption of aquatic animal foods rose from 9.1 kg in 1961 to an estimated 20.7 kg in 2022” (FAO, 2024).

Fish production in Nigeria comes from three sources: Aquaculture (fish farm), Industrial fishing and Artisanal (inland rivers, lakes, costal and brackish water) (Mohammed, Ekundayo, Maradun, Tambari, Ejezie, Yahaya and Ukwenya 2023). “Artisanal fishing is an ancient human tradition that involves the activity of trying to catch fish and other aquatic foods for human consumption and economic benefits. The techniques that are used in this system of fishing include trapping, angling, netting, spearing, and hand gathering” (Iruo, Onyeneke, Eze, Uwadoka and Igberi (2019). It is a low-technology input which is labour-intensive fishery practice, sometimes using canoes paddled or motorized. The artisanal canoe fleet exploits coastal waters up to 5 nautical miles from the shore, the vast networks of brackish waters of the Niger Delta and other major rivers. The gear is mainly gill nets, cast nets, hooks, beach seines and various forms of traps in the estuaries (FAO, 2025). “Nigeria is blessed with marine water, brackish water, and inland water fishing resources. The country has a coastline of 853 km2, inland waters of 125,470.82 km2, and a maritime area of 46,300 km2 which can accommodate more than six billion artisanal fish farmers and can produce more than 980,000 metric tonnes of fish per year yet Nigeria is a net importer of fish amounting to about USD 0.6 billion and exports valued at USD 90 million in 2023” (FAO, 2025). Ayotunde (2019) opined that “Nigeria is the largest fish consumer in Africa and among the largest fish consumer in the world with over 1.5 million tons of fish consumed annually”. He noted that global increase in fish consumption will rise predominantly among the developing countries where population is growing and higher incomes are being expected. Mabel, Adams and Babajide, (2018), Oladimeji, (2018), George, Akinrotimi and Nwokoma, 2021 noted that artisanal fishery is an untapped potential in Nigeria and the entire African continent

“The activities of the artisanal fishing either seasonally, full-time or part-time, are frequently aimed at providing both domestic fish consumption and international markets with fish and aquatic foods” (Iruo *et al,* 2019). “This is particularly relevant in Nigeria, where over 60% of the total domestic fish output is derived from artisanal fishers, highlighting their importance in meeting local demand for fish and providing livelihoods for many families” (Bamigboye and Koledoye, 2022). Apart from its high quality nutrition, fish is a cheaper source of protein compared to other animal protein sources such as beef, pork, chicken, and goat meats (George *et al*, 2021) The scale of artisanal fisheries in Nigeria is substantial, with numerous communities relying on these fisheries for their daily sustenance and economic activity and such is the case with families along the water bodies of Ahaha, Inangha And Okpon in Obubra, Cross River State, Nigeria. Furthermore, “the contribution of artisanal fisheries to local economies is often greater than that of industrial fisheries, as they generate less environmental impact while providing social benefits through job creation and community engagement” (López-Angarita, Tilley, Díaz, Hawkins, Cagua and Roberts, 2018; Belhabib, Cheung, Kroodsma, Lam, Underwood and Virdin, 2019). “In terms of food security, artisanal fisheries are indispensable, particularly in a country like Nigeria, where fish constitutes a significant part of the diet for many households. The reliance on fish as a primary protein source underscores the need for sustainable management practices to ensure the long-term availability” (Ojo, Akingbola, Gbadamosi, Samuel, Olabamiji, Aboderin and Mustapha, 2025). **On average, Nigerians consume approximately 8 kg of fish per person per year. While this remains below the global per capita average of around 21 kg (FAO, 2025). “Fish still plays an important role as provider of animal protein in remote areas. In 2022, the total fisheries production was estimated at 1.1 million tonnes, to which marine catch contributed 36 percent, inland waters catch contributed 36 percent and aquaculture 28 percent. The sector contributed 0.83 percent of national GDP in 2020 and 3.26 percent of the agricultural GDP and more than 80 percent of Nigeria’s total domestic production is generated by artisanal small-scale fishers from coastal, lagoons, inland rivers, lakes and creeks of the Niger Delta” (FAO, 2025).The Food and Agriculture Organisation (FAO) in recent years, reported that the growth in production has declined, the demand for fish in Nigeria is still not met, despite having a domestic production estimated at over 1 million tonnes while the demand stands at about 2.1 million tonnes per year (FAO, 2025). This means there is a shortfall of about 1.1 million tonnes. To temporary solve this problem, Nigeria has engaged in fish importation while several other policies are being put in place by successive administrations to improve on local production. However, none of the efforts has been successful enough to make fish supply available commodity to the common man in the market.**

Sogbesan and Kwaji (2018) and Falola, *et al,* (2022) noted that Nigeria is the largest African importer of fish and the fourth-largest global importer of fish. And this is so because the country adopt this to meet up with increasing demand for fisheries products. This has led to the government’s resolve to augment fish supply with importation of frozen fish and other fish products. Reports have indicated that several millions of the Nigerian currency is being expended on fish importation Olaoye and Ojebiyi (2018). This development is regarded as a mere waste of the national resources that could have been directed to the development of the fisheries sector.

Some school of thoughts believed that socio-economic factors are the major constraints in artisanal fishing production industry in Nigeria, others believed that fishing materials are the major fishing constraints. To elucidate this gap, it becomes pertinent that a study is conducted among the artisanal fishers along the water bodies of Ahaha, Inangha and Okpon in Cross River State to find out what socio-economic variables affect them in their fishing profession in the study area. And what fishing materials do the artisanal fishers use in fishing? What are the major constraints faced by the artisanal fishers for large scale fish harvest in the area?

**Methodology**

The study area is in the Cross River at Ahaha, Inangha and Okpon in Obubra local Government Area, Cross River State, Nigeria. The area lies within the coordinates of Latitudes 50 55’N and 60 6’ N of Equator and Longitudes 80 14’ and 80 26’ East of the Greenwich Meridian.

**Sampling Techniques**

A random sampling technique was used to generate data for the study, accordingly, 200 artisanal fish farmers were randomly selected from Ahaha, Inangha and Okpon rivers based on their intensity of artisanal fishing practiced in the area.

**Source of Data Collection**

Data for this study were collected from primary sources; they were obtained basically through the use of structured questionnaire and scheduled interviews. The questionnaire was designed to solicit information on respondent’s socio-economic factors such as gender, marital status, household size, age, fishing experience and educational qualification. Also, data were generated on cost of nets, hooks, quantity of baits used, number of canoes owned, age of fishing gears and the number of hours engaged in fishing.

**Analytical Tools**

Based on the objectives of this study, data were analyzed using descriptive statistics, multiple regression analysis and the Likert scale rating. The descriptive statistics was used to discuss the socio-economic characteristics of the artisanal fishers in the area. The method was used to examine the variable of sex, age, marital status, family size, level of education and fishing experience using simple averages, frequency counts and percentages. Multiple regression analysis was used to determine the factors of socio-economic variables and fishing resources affecting fish catch in the area.

The implicit model is as specified below;

Y=b0+b1x1+b2x2+b3x3+b4x4+b5x5+b6x6+u - - -------------------------------------------- (i)

Where;

Y = Quantity of fish catch (kg)

X1 = Fishing net (₦)

X2 = Baits (kg)

X3 = Cost of hooks (₦)

X4 = Number of hooks (Number)

X5 = Age of fishing gears (Number)

X6 = Number of hours in fishing (hours)

u = Error term

Explicitly, it was specified thus;

Linear: Y = b0+b1x1+b2x2+b3x3+b4x4+b5x5+b6x6 + u - - - (ii)

Semi-log: Y= logb0+b1logx1+b2logx2+b3logx3+b4logx4+b5logx5+b6logx6+u- - - (iii)

Double log: Log Y=logb0+b1logx1+b2logx2+b3logx3+b4logx4+b5logx5b6log6+u - - -(iv)

The four-point Likert scale technique with values of 4, 3, 2, and 1 was used to rate major constraint put forward by the artisanal fishers in the study area. The ratings were highly severe, severe, moderately severe and not severe (4+3+2+1= 10/4 =2.50).

To ascertain which of the factors constitute a critical constraint, the variable mean score of 2.50 was used. Accordingly, any variable with a mean score of 2.50 and above was considered critical while variables with mean score below 2.50 were considered not critical.

**RESULTS AND DISCUSSION**

**TABLE 1: Socio-economic characteristics of the artisanal fishers in the study area**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S/N | Variables | Frequency | Percentage | mean |
| 1 | **Gender** |  |  |  |
|  | Male | **182** | **81** |  |
|  | **Female** | **38** | **19** |  |
|  | **Total** | **200** | **100** |  |
| 2 | **Marital status** |  |  |  |
|  | **Single** | **54** | **27** |  |
|  | **Married** | **94** | **47** |  |
|  | **Divorced** | **24** | **12** |  |
|  | **Widow/Widower** | **28** | **14** |  |
|  | **Total** | **200** | **100** |  |
| 3 | **Age** |  |  | **30** |
|  | **Less than 20 years** | **18** | **9** |  |
|  | **21-30 years** | **94** | **47** |  |
|  | **31-40 years** | **72** | **36** |  |
|  | **41-50 years** | **14** | **7** |  |
|  | **51 years and above** | **2** | **1** |  |
|  | **Total** | **200** | **100** |  |
| 4 | **House hold Size** |  |  | **5** |
|  | **1-5** | **138** | **69** |  |
|  | **6-10** | **52** | **26** |  |
|  | **11-15** | **10** | **5** |  |
|  | **16 and above** | **0** | **0** |  |
|  | **Total** | **200** | **100** |  |
| 5 | **Fishing experience** |  |  | **8** |
|  | **1-5 years** | **62** | **31** |  |
|  | **6-10 years** | **100** | **50** |  |
|  | **11-15 years** | **18** | **9** |  |
|  | **16-20 years** | **16** | **8** |  |
|  | **21 years and above** | **4** | **2** |  |
|  | **Total** | **200** | **100** |  |
| 6 | **Level of Education** |  |  |  |
|  | **No formal Education** | **40** | **20** |  |
|  | **First school Leaving** | **64** | **32** |  |
|  | **Secondary School** | **80** | **40** |  |
|  | **Higher Institution** | **16** | **8** |  |
|  | **Total** | **200** | **100** |  |

**Source: Field data, 2024**

# Gender

From table 1, the variable of Gender shows that majority (81%) of the Artisanal fishers in the study area were male while (25.2%) were female. This shows that more men are involved in fishing activities in the study area than women. This finding agrees with the work of Mohammed *et al* (2023) and Okwu and Acheneje (2011) who reported that about 81.8% male and 18.2% female were involved in artisanal fishing in Borgu Local Government Area, Niger State, and Makurdi, LGA, Benue State, Nigeria respectively. The predominance of male in Artisanal fishing may be attributed to the fact that fishing activities is majorly carried out by men while the job of fish processing, storage and marketing are done by the women in the area.

# Marital Status

The table revealed that 47% of the artisanal fishers in the study area were married while 27% were single. The widowed/widowers and the divorced represented 14% and 12%respectively. This means that married farmers dominated in artisanal fishing in the study area and that artisanal fishing would serve as a reliable source of income to meet the need of the family. This result is in accordance with George *et al* (2021) findings in three Local Government Areas of River State, Nigeria where they found that majority of the respondents (56.74%) were married.

# Age of respondents

On age distribution, the age bracket of 21 – 30 years had 47%, 31 – 40 years had 36%, those less than 20 years were 9%, while 7 % and 1% were within the age brackets of 41-50 years and 51 years and above respectively with a mean age of 30 years. This shows that fishing is mostly carried out by adults who are of average age of 30 years. Also, fishers within the ages of 21 – 40 years of age are assumed to be more mature and may be able to withstand stress in fishing operations than other age bracket. This corresponds with the work of Falola *et al* (2022) who reported that most fish farmers are within the ages of 20 – 40 years of age with a mean age of 38 years.

# Household size

The result revealed that 69% of the Artisanal fishers in the study area had a household size of 1-5 members per family, 26% had household size of 6-10 members per family. However, 5% and none of the Artisanal fishers claimed they had 11-15 members and 16 members and above respectively in their family. This finding agrees with Ifeanyi-Obi (2018) study in Eastern Obolo Local Government Area of Akwa Ibom State where majority (42%) of the Artisanal fishers had less than 5 people per household.

# Educational level

The educational level of the respondents in table 1 indicates that 80% of the respondents have some form of formal education, 40% of had SSCE, 32% had First School Leaving Certificate, 8% attended higher institution, while 20% had no formal education. Falola *et al* (2022) had similar result in Kwara state, Nigeria where about 79.9% of the Artisanal fishers were literate while only 19.1% had no formal education. This implies that majority of the artisanal fish farmers had some form of education, suggesting that innovations for fishing activities can easily be transmitted through them.

# Fishing experience

The study revealed that 50% of the respondents in the study area have a fishing experience of 6-10 years, followed by 31% of the Artisanal fishers with 1-5 years fishing experience and then 9% for 11-15 years, 8% for 16-20 years while 2% had fishing experience of 20 years and above. This finding is similar to Okwu and Acheneje (2011) who had a mean fishing experience of more than 10 years. This further explains why majority of the Artisanal fishers in the study area are within the age bracket of 21-40 years old as majority (81%) of them have a fishing experience of 10 years or less.

**Table 2** **Regression analysis on effects of socio-economic characteristics on artisanal fishers on fish catch in the study area.**

**Variables Linear Semi Log Double log**

**Function Function Function (le)**

Constant 1048.864 7.517 7.653

(1772.583) (0.450) \* (1.073) \*

Age (X1) 6.07 - 0.002 -0.021

(54.210) (0.141) (0.359)

Gender (X2) 850.376 0.250 0.358

(465.099) \*\*\* (0.118) \*\* (0.163) \*\*

Marital status (X3) 129.401 0.024 0.005

(365.502) (0.093) (.168)

Household size (X4) 39.434 0.024 0.16

(12.915) (0.031) (0.179)

Household income (X­5­) -28.797 -0.011 0.059

(371.503) (0.094) (0.145) \*

Level of education (X­6­) 301.212 0.02 0.068

(446.341) (0.113) (0.194) \*

Fishing experience (X­7­) -11.569 -0.006 0.003

(46.175) (0.012) (0.86) \*

R2 0.55 0.65 0.67

F-ratio 0-940 1.124 1.139

S**ource:** **Field data, 2024**

\*Significant at 1% level, \*\*Significant at 5% level

\*\*\*Significant at 10% level (t-values are in parentheses).

From the multiple regression analysis, the double logarithmic model was chosen as the lead equation (Le) to discuss the results based on the aproiry expectations, the economic theory, the statistical and econometric conditions. The results of the analysis presented in table 2 revealed that the variable of age (X1) had a coefficient of -0.021 and was negatively related with the output of fish. The negative coefficient signifies that as artisanal fishermen get older, their level of fish catch will decrease hence this might arise from the point that old age may not permit them to be active in fishing business as they used to be when they were young.

The variable of gender (X2) had a positive coefficient of 0.358 and was significant at (P>0.05). This means that sex has implication in fishing activities in the area suggesting that gender influence determine the quantity of fish that can be caught by those who participate in it. The coefficients of marital status (X3) was 0.005 and household size (X4) was 0.16 were positive but were not significant meaning that the quantity of fish catch are positively influenced by the marital status and the household size of the artisanal fishermen in the area. The household income (X5) was 0.059 indicating a positive relationship with output of fish catch and was significant at (P>0.01) level. This shows that the artisanal fishers who had better income can achieve a higher catch hence they can afford to buy fishing materials to improve on their fishing activities implying that household income has positive relationship with fish catch in the area.

Level of education (X6) had a coefficient of 0.068 and was significant at (P>0.01). The positive sign indicates that level of education influence the quantity of fish output caught by the fishermen, suggesting that those who acquire knowledge through training in fishing have better techniques in fishing in the area than those who do not have educational background in fishing. The variable of fishing experience (X7) had positive coefficient of 0.003 and was significant at (P>0.01), indicating that those with good fishing experience do explore more opportunities to catch more fish than those who do not.

The coefficient of determination R2 was 0.67 implying that about 67% of the socioeconomic variables influenced the output of fish caught by the artisanal fishermen along the water bodies of Ahaha, Inangha and Okpon in Obubra, Cross River State, Nigeria. Given these findings, it can be concluded that some socioeconomic variables such as gender, household income, level of education and fishing experience significantly influenced the quantity of fish caught by the artisanal fishers along the water bodies of Ahaha, Inangha and Okpon in Obubra, Cross River State, Nigeria.

**Table 3** **Regression analysis results on the effect of fishing materials on fish catch by the artisanal fishermen in the study area.**

**Variables Linear Semi log Double log**

**function function function**

Constant 803.9755 -13259.68 -1.77313

(2.735437) \* (-6.40872) \* (-1.48914)

Cost of fishing net (X1) 0.004409 332.1235 0.196981

(0.530492) (1.982544) \*\* (2.043165) \*\*

Cost of baits (X2) -0.10347 -107.7308 -0.05617

(-0.72138) (-1.332321) (-1.20713)

Number of hooks (X3) 0.011642 68.26220 0.051994

(0.477648) (1.142080) (1.511552)

Number of canoes (X4) 68.89383 -209.3938 -0.11248

(0.981425) (-1.532664) (-1.4306)

Age of fishing gears (X­5­) -10.1564 -14.40428 0.013424

(-0.75618) (-0.149750) (0.240501)\*\*

Numbers of times in

fishing (X­6­) -67.4465 -143.1301 -0.05046

(-1.63505) (-1.282387) -0.78563

R2 0.46 0.56 0.57

F-ratio 6.900789\* 14.47972\* 14.94242\*

**Source:** **Field data, 2024**

\*Significant at 1% level, \*\*Significant at 5% level

\*\*\*Significant at 10% level (t-values are in parentheses).

The result of the analysis presented in table 3 revealed that cost of fishing net (X1) was positive and significant at (P>0.01). This implies that if the price of fishing net increases, it will affect the quantity of fish catch given that the artisanal fishermen will spend more money to get fishing net for fishing. The cost of baits (X2) and the number of canoes (X4) used in fishing were negatively associated with the quantity of fish catch and were not significant even at 10%. This means that an increase in the cost of baits and canoes may result to a decrease in fish output in the study area. The number of hooks used (X3) was positively associated with output of fish catch indicating that those who use good and more hooks do have opportunities to catch more fish than those who used fewer hooks.

Age of fishing gears (X5) was positive and significant at (P>0.1) indicating that the older the age of fishing gears, the smaller the quantity of fish that will be caught. Number of times of fishing (X6) had a negative sign and was not significant even at 10% level. This means that the number of times of fishing does not determine the quantity of fish catch by a fisher man. Hence the more often fish are caught, the less mature they may be found to be harvested.

**Table 4: Constraints faced by Artisanal fish farmers in the study area**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CONSTRAINTS** | **VSC**  **(4)** | **SC**  **(3)** | **MSC**  **(2)** | **NC**  **(1)** | **TOTAL** | **SUM** | **MEAN** | **RANK** |
| Drying up of river during dry season | 140 | 40 | 12 | 8 | 200 | 664 | 3.32 | 1st |
| Difficulties to access fishing areas | 94 | 70 | 20 | 16 | 200 | 642 | 3.21 | 2nd |
| Excessive rainfall during raining season | 74 | 76 | 38 | 12 | 200 | 612 | 3.06 | 3th |
| High cost of fishing canoes | 70 | 80 | 30 | 20 | 200 | 600 | 3.00 | 4th |
| Lack of extension services to educate artisanal fishermen | 68 | 74 | 36 | 22 | 200 | 588 | 2.94 | 5th |
| High cost of fishing net | 32 | 104 | 56 | 8 | 200 | 560 | 2.80 | 6th |
| Non availability of baits | 60 | 62 | 36 | 42 | 200 | 540 | 2.70 | 7th |
| Non availability of good hooks | 50 | 70 | 45 | 35 | 200 | 535 | 2.67 | 8th |
| Inadequate processing facilities | 48 | 67 | 50 | 35 | 200 | 528 | 2.64 | 9th |
| Lack of market for the fish | 20 | 50 | 50 | 80 | 200 | 410 | 2.05 | 10th |

**Source: Field survey, 2024**

**NOTE:** VSC= Very severe constraint. SC= Severe constraint.

MSC= Moderately Severe constraint.NC=Not a constraint.

* Mean score less than 2.5= Minor constraints and mean score greater than 2.5= Major constraints.

The results in table 4 revealed that drying up of rivers during dry season was rated (1st) with a mean value of 3.32 as one of the major problems in fishing activities in the area. The second problem was the difficulties to access fishing points along the rivers (2nd) with a mean value of 3.21. Excessive rainfalls during raining season resulting to flood had a mean value of 3.06 was rated (3rd). Others includes high costs of canoes for fishing 3.00 (4th), lack of extension services to educate artisanal fishermen 2.94 (5th), high cost of fishing nets 2.80 (6th), non-availability of baits 2.70 (7th), Non availability of good hooks for fishing 2.67 (8th) and inadequate processing facilities2.64 (9th). Lack of market for the fish caught was not a problem as this has a mean value of 2.05 and was rated (10th)

This result is in consonance with the findings of Falola *et al* (2022) in Kwara state, Nigeria where they observed that high cost of fishing gears, inadequate processing equipment and lack of extension services were discovered to be among the major constraints faced by the artisanal fishers in their study area. Lack of market for fish caught was not considered a constraint which is in consonance with the position of Bamigboye and Koledoye, (2022) who noted that there is ready local demands for fish providing diets to many households.

**CONCLUSION**

The study concludes that socio economic characteristics such as gender which was significant at (P>0.05) level, household income, level of education and fishing experience which were significant at (P>0.01) level all have significant influence on fish harvested along the water bodies of the study area. Cost of fishing net and age of fishing gears were also significant at (P>0.05) level indicating that these variables too have influence on fish catch along the water bodies of the study area. Some constraints observed were drying up of rivers during dry season, difficulties to access fishing points along the rivers, excessive rainfalls during raining season, high costs of canoes for fishing as well as lack of extension services to educate the artisanal fishermen on fishing techniques. The study recommends that artisanal fishermen should be regularly trained in modern fishing techniques while the costs of fishing gears and crafts be subsidized by the government to the artisanal fishermen in the study area.

**Consent**

As per international standards or university standards, Participants’ written consent has been collected and preserved by the author(s).

**Disclaimer (Artificial intelligence)**

Option 1: I hereby declare that No generative AI technologies such as large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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