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Socio-Economic Characteristics, Artisanal Methods and Constraints among Fishers in Lower River Niger, Kogi State Nigeria

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Abstract
Artisanal fishery and its potential are threatened in Nigeria due to some methods used in fishing and unavailable inputs. The study investigated socio-economic characteristics, artisanal methods and constraints among fishers in the lower river Niger, Kogi State Nigeria. All four Local Governments along lower River Niger were selected and thirty percent (30%) of artisanal fishers were randomly selected from each community in each of the four Local Governments to make up one hundred and ninety-four (194) respondents. Data were collected through structured questionnaires and scheduled interviews administered to the artisanal fishers. Data were analyzed with descriptive (frequency, percentage and mean) and inferential analyses which include Chi square. The results showed that 89.2% were male, 56.2% are married, 41.2%, have a household size of 1- 4 and 54.1% of fishers earned a daily income of #5,000 - #10,000. *Catfish spp* (43.1%) was the dominant fish species caught; fishing is mostly done in the evening by 54.1% of the fishers, 69.1% of the fishers used planked canoes while only 28.9% used outboard engine, 54.1% used cast net, 41.8% used subsidized fishing craft. Constraints of fishers ranked by mean weighted score revealed that lack of sufficient capital $\bar{x} = 3.70$ and decrease in catch $\bar{x} = 3.68$ were the major constraints encountered by the artisanal fishers. The study recommended that fishers should form cooperative association through which their resources can be pulled together and made available to members in the form of loans and for the procurement of fishing inputs that can be hired out at low rate to solve the problem of inadequate capital.

Keywords: Artisanal, craft, fishing gear, fishers, species

Introduction

Nigeria is blessed with vast and valuable fresh water resources. The fresh water habitat covers an area of over 4,212,500ha distributed within river systems, lake, flood plains and reservoirs of varying sizes and geographical locations on land (Ssentongo *et al*., 2015). These water bodies harbor diverse aquatic fauna including numerous fish species. The country's fresh water bodies, with abundant fish species, are the richest in fish diversity in West Africa (Odiko *et al*., 2010). The term "artisanal fishery" evokes a mental image of small, traditional fishing craft equipped with low- tech gear requiring labor-intensive fishing methods. Fishermen are typically the central subjects of this platonic scene, operating boats individually or in small-crews in the pursuit of fish. Even individual fishing strategies are often presumed to follow one of several archetypical models of behavior, whether inherently, ecologically and socially harmonious and therefore sustainable (Smith and Basurto, 2019). Omorinkoba *et al*. (2011) defined artisanal fisheries as small scale fisheries where the fishers operate in small units. Ekpo and Essien-Ibok (2013) stated that artisanal fisheries' characteristics are labour intensive, involve very low capital investment, infrastructure facilities such as cold storage and processing plants are very poorly developed and fishing units are numerous and generally highly scattered in remote hardly inaccessible settlements which makes evacuation, distribution and marketing of their products rather difficult. The diversity and plurality of SSF frustrate efforts to systematically and reliably count them at higher scales, and these challenges are further exasperated by a chronic lack of institutional capacity and meager political will to prioritize SSF, their specific data needs, and unique methodological challenges (Welcomme *et al*., 2010; Kittinger *et al*., 2013; Basurto

et al., 2017). Despites the current contributions of artisanal and its potentials in Nigeria, its sustainability is threatened due to overexploitation of the natural stock (which is getting to its limit) and the use of unsustainable and destructive artisanal methods by the fishers (Sogbesan and Kwaji 2018). The study therefore investigated the socio-economic characteristics, artisanal methods and constraints among fishers in the lower river Niger, Kogi State Nigeria. Specific objectives are to :(i) identify the socio-economic characteristics of the fishers (ii) examine the artisanal methods (iii) and investigate the constraints among fishers in the study area.

Methodology

The study area comprise of four different Local Government areas in Kogi State, including Idah, Igalamela-Odulu, Ofu and Ibaji. Idah is a town located at 7°05′N 6°45′E on the Eastern bank of the Niger River in the middle belt region of Nigeria. Ida is the Headquarters of the Igala Kingdom with an area of 36 km2 and a population of 79,815 at the 2006 census. Igalamela-Odolu is located at 7°10′16″N 6°49′35″E, bordered by the Niger River in the West and Enugu State in the East. Its Headquarters is Ajaka town in the north. Ofu is located at 7°14′09″N 6°55′32″E, the River Niger formed its Western boundary; its Headquarters is in Ogwoawo (or Ugwalawo or Gwalawo) town to the South. Ibaji is located between Latitude 06°52'00"N 06°87'00"N of the Equator, and Longitude 06°48'00" E06°80'00"E of the Greenwich meridian, located in the Eastern part of Kogi state and has an extension of 1, 377km², separated from Edo State to the West by the river Niger, and bordering Delta State in the South, its Headquarters is Onyedega. The major activities of the four Local Government areas are farming and fishing (Wikipidia, 2022). Multi-stage random sampling procedure was adopted in selecting the fishers. In the first stage, all four Local Governments along lower River Niger were purposively selected and thirty percent (30%) fishers were randomly selected from each community in each of the four Local Governments to make up one hundred and ninety-four (194) respondents. The fishing communities in the Local Governments are; Idah: IdokolikoEgah (28), Ofurubber (26), Ogegele (16) and Efulu (18). Igalamela: Okpakpata (18), Ujagba (17) and Aya (12). Ibaji: Ejule-Ojebe (22), Odogwu (14) and Onyedega (16). Ofu: Ummomi (12), Akpagidigbo (14), Ofakete (9) and Olofu (11). Data were collected through structured questionnaires and scheduled interviews administered to the fishers. Data were analyzed with descriptive (frequency and percentage), inferential analyses mean score determined through 4 points Likert scale and Chi-square.

Results and Discussion

Socio-economic characteristics of the Artisanal fishers

Table 1 shows the socio-economic characteristics of the fishers with male dominating the profession (89.2%) while 10.2% are female, 39.2% are between 31-40 years and 56.2% are married. Bawa *et al.* (2019) and Aminu *et al.* (2017) in a similar study in Kebbi and Lagos States reported that artisanal fishers were majorly male, married and between 31-40 years. Only 62.4% had Ordinary level Certificates. The implication is that fishers should be able to read any useful information on technology that can be adopted in the profession. Household size of 1- 4 were 41.2%, the small household size in the study agreed with Ogunremi *et al.* (2017) in a similar study among artisanal fishers on River Benue in Benue State. However, the assumption has been that large house hold size of fishers is directly proportional to the fishing intensity because household members can serve as labour source. The fishing experience of 6-11 years was 46.9%, only 54.1% Artisanal fishers earned daily income of N5,000 - N10,000.

Artisanal methods of the fishers

Table 2 presents the artisanal methods of the fishers. *Catfish spp* was the dominant fish species caught (43.1%) and others (30.1%), fishing is mostly done in the evening (54.1%). Omitoyin and Aderanti (2020) reported that Catfish and *Tilapia spp* were predominantly caught in upper River Niger in Niger State this is because fish species are highly migratory. More than half of the fishers used planked canoe (69.1%) for fishing, not powered by outboard engine (71.1%), only 54.1% used cast net while 30.4% used hook and line. Fishing craft (41.8%) and fishing gear (30.9) were subsidized for the fishers. Cat fish species are mostly abundant in Nigeria inland waters because of the ability to with stand wide variation of the environmental conditions. The implication of using canoe not powered by outboard engine is that the artisanal fishers would not be able to cover long distance on water while fishing. Huseyinoglu and Anagara (2023) reported that the fishers make use of paddling, polling, and motorized canoes for fishing in the inland waters of Nigeria. Dienye and Olopade (2017) opined that cast net, gill net, various sizes of hooks and pole and lines are used by artisanal fishers as fish tools while Plank and Dugout canoes are the major crafts.

Constraints of artisanal fishers

Table 3 presents the constraints of the fishers which were ranked by weighted mean scores (WMS) including lack of sufficient capital (3.70), decrease in catch (3.68), Aquatic weed (3.65), and problem of middlemen/women (3.61). Capital is a major constraint because others revolve on it. Some of these constraints are interwoven; one depends on the other and vary from one fishing community to another because of the peculiarity associated with different locality that directly or indirectly influences the fishers. Inadequate access to credit pose a barrier to fisheries investment and is aggravated by high cost of equipment. While high cost of equipment may impact on the catch a serious problem for profitability of the fishers, climatic conditions may trigger fish spoilage due to inadequate technology (Okeowo *et al*., 2015). Also, non-availability of a credit schedule is a peculiar problem of artisanal or small scale fisheries which influence capital –intensive expansion. Artisanal fisheries are not regulated; been an open

access fishery, the catches decrease with time. Akankali and Jamabo (2011) opined that the reasons centre on indiscriminate fishing, and destruction of breeding sites.

Relationship between socio economic characteristics and artisanal methods of fishers

The result of the test of hypothesis on relationship between socio economic characteristics and artisanal methods of fishing is presented in Table 4. The findings revealed that gender, age, marital status and monthly income have a significant and positive relationship between socio economic characteristics and artisanal methods of fisher in the study area. The implication is that artisanal methods used by fishers depended on gender, age, marital status and monthly income. The use of cast net is a method of fishing only used by male while traps are used by both gender but are common among female who does not fish far distance from the water body. Age is a function of experience which directly influences artisanal methods; marital status on the other hand could influence artisanal methods because a couple could decide to embark on fishing with the division of labour while fishing. Income plays a dominant role in the artisanal method because it determines the purchase of fishing gear and crafts on which the fishing profession depends.

Relationship between socio economic characteristics and challenges of Artisanal fishers

The result of the test of hypothesis on relationship between socio economic characteristics and constraints of the fishers is presented in Table 5. The findings revealed that only age, marital status and monthly income have a significant and positive relationship between socio economic characteristics and constraints of fishers in the study area. The implication is that those that are older because of age are pruned to be constrained likewise married or single have its attendant constraints among the fishers. Daily income earned cannot meet up with the expenses needed as input by the fishers it means the lower the income the more the constraints faced by the fishers.

Conclusion

Fishers are mostly male, married and used local crafts powered manually. Gender, age, marital status and daily income affected the artisanal methods of the fishers. The study recommended that fishers should form cooperative associations through which their resources can be pulled together and made available to members in the form of loans and for the procurement of fishing inputs that can be hired out at low rates among the fishers which can serve as an avenue of increasing fish caches and making more money daily. Government should also assist fishers through loans and subsidized input as obtainable in other areas of agriculture.

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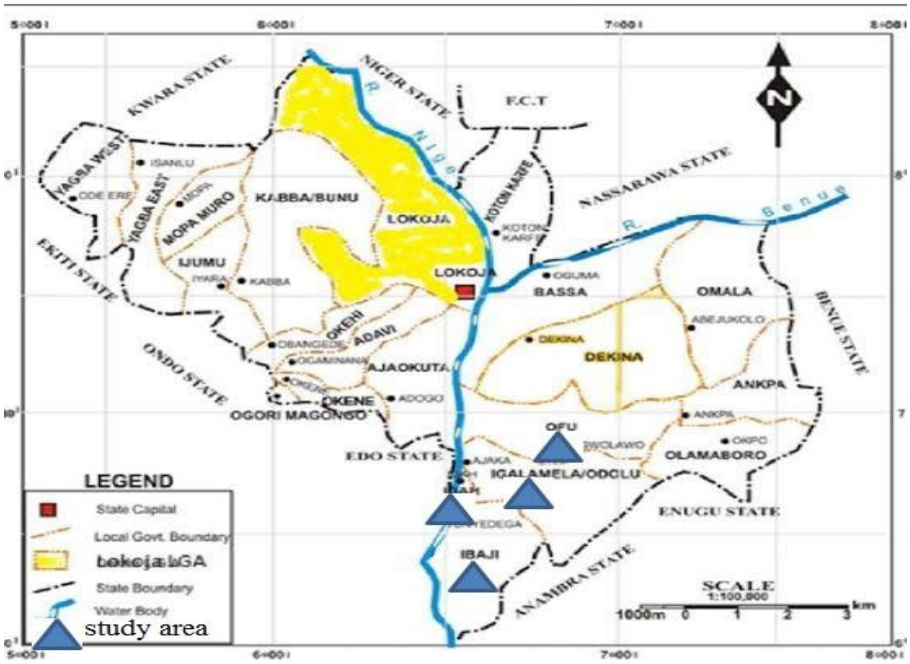

Source: Google search (www.wikipedia 2022)

Figure 1: Map of Kogi State showing Ofu LGA, Ibaji LGA, Igalamela LGA and Idah LGA (The study areas)

Table 1: Socio-Economic Characteristics of the Artisanal Fishers

Variable		Frequency	Percentage
Gender:	Male	173	89.2
	Female	21	10.8
Age:	20-30	10	5.2
	31-40	76	39.2
	41-50	4	2.1
	51 -60	2	1
	60 and above	2	1
Marital Status:	Single	85	43.8
	Married	109	56.2
Educational status:	NND/B.Sc	30	15.5
	NCE/OND	40	20.6
	Higher Degree	1	0.5
	O'level	121	62.4
Household size:	1-4	80	41.2
	5-10	72	37.11
	>11	52	26.8
Fishing experience (yrs):	1-5	30	15.5
	6-11	91	46.9
	11-15	70	36.1
	16-20	3	1.5
Daily income (#):	5000 – 10,000	105	54.1
	11,000 – 15,000	44	22.7
	16,000 – 20,000	45	23.2

Source: Field Survey, 2022

Table 2: Artisanal methods of the fishers

Variables	Frequency	Percentage
Types of fish caught: *Catfish spp*	84	43.1
Tilapia spp	50	25.8
Others	60	30.1
Time of fishing: Morning	44	22.7
Afternoon	45	23.2
Evening	105	54.1
Type of craft used: Dugout canoe	60	30.9
Planked canoe	134	69.1
Powered craft (Outboard engine): Yes	56	28.9
No	138	71.1
Types of fishing gear: Gill net	2	1.0
Lift net	3	1.5
Cast net	105	54.1
Hook and line	59	30.4
Pole and line	24	12.4
Subsidized fishing craft	81	41.8
Subsidized fishing gear	19	9.8
Smoking kiln	60	30.9
Loan	10	5.2
Relief materials during flood	24	12.4

Source: Field survey, 2022

Table 3: Constraint faced by the fishers

Variables	Strongly Agree	Agree	Undecided	Disagree	Mean
Decrease in catch	150	30	110	4	3.68*
Obnoxious fishing methods	40	30	15	9	3.53*
High cost of fishing inputs	40	150	2	2	3.18*
Lack of sufficient capital	160	17	10	7	3.70*
Lack of modern processing facilities	140	130	14	10	3.07*
Post harvest loss	110	60	15	9	3.39*
Problem of middle men/women	140	40	6	8	3.61*
Aquatic weed	150	25	15	4	3.65*

Source: Field Survey, 2022

Table 4: Significant relationship between socio - economic characteristics and artisanal methods among fishers

Hypotheses	Parameter	t-value	p-value	Decision (HO)
1a	Gender	6.314	6.646	Accepted
1b	Age	2.132	3.367	Accepted
1c	Marital status	2.132	42.66	Accepted
1d	Level of education	2.920	2.340	Rejected
1e	Household size	2.920	1.228	Rejected
1f	Daily income	2.132	5.879	Accepted

Source: Field Survey, 2022

Table 5: Significant relationship between socio economic characteristics and the constraints of fishers

Hypotheses	Parameter	t-value	p-value	Decision (HO)
1a	Gender	2.920	1.228	Rejected
1b	Age	2.132	4.95	Accepted
1c	Marital status	2.132	3.367	Accepted
1d	Level of education	2.920	1.806	Rejected
1e	Household size	2.132	1.196	Rejected
1f	Daily income	6.314	6.646	Accepted

Source: Field Survey, 2022