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Socio economic characteristics of artisanal fishermen in inland waters of Kebbi state, North-West Nigeria

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Abstract

This study aims to unveil the present socio-economic status of fishermen in Kebbi state northwest Nigeria. Three fishing communities were randomly selected and information about fishing gears, fish landing's diversity and the social status of the fishermen, such as education level, religion, age, occupation, house condition, sanitary condition, and other facilities were collected using a set of structured questionnaire from 289 fishermen in March 2017. In this study, the socio-demographic results revealed that all the fishermen were 100% Muslim by faith. Though, 31.8% were youth between 31 and 40 years old however, only 41.9% had their formal education. On the other hand, most of the fishermen (97.9%) engaged in fishing as their main occupation, with 49.5% categorized as low income earners of the fisher's community. Looking at the educational level and the standard of living of the fishermen, there is a need for the government and the non-government organizations to place some efforts in other to help in improving the facilities and amenities available within the fishermen community of the Kebbi state.

Keywords: Socio economic, artisanal fishermen, inland waters, Kebbi sate, northwest Nigeria

Introduction

Fisheries and fishing businesses are important sectors for many nations of the world from the perspective of income and employment generations. Fishing plays significant roles in supporting the livelihoods of fishermen worldwide and also provides important source of food to over one billion people around the world ^[1]. Small-scale fisheries occurred throughout the world, but predominated by the tropical countries and less developed countries. The fisheries also differ based on locations, and can generally be categorized as multi-gear and multi-species fisheries, with almost all of the catch being used as food fish ^[2].

Small-scale fisheries make significant social and economic contributions to society at the national, local, and individual levels ^[3]. Half of the world's supply of food fish originates from small-scale fisheries, and it has been projected that 90% of the fishers worldwide came from the small-scale fishers ^[4]. Small-scale fisheries are fundamental for the livelihoods, welfare, and food security of the coastal communities, especially in some poorest countries of the world. Additional to that, important welfare dimension of the small-scale fisheries is that its capacity to absorb, or act as a buffer for excess labor. The fisheries also serve as social safety nets in the sense that people may provisionally turn to fishing in times of economic stress or disaster ^[4]. Artisanal fisheries could be a traditional fishery for commercial fishing or sustenance by means of local or small-scale fishing gear such as nets, traps and also by means of motorized or nonmotorized fishing boat throughout fishing activities ^[5]. Artisanal fisheries use the consistently small amount of financial capital for fishing activities by covering small distances near to the coastal shore of the water. The harvested fish are sold in their area and consumed by fisher's families ^[5].

Nigeria has a population of about 140 million ^[6] is a multiethnic nation with a land space of about 2 923,768km, having an inland shelf area of 47, 2 934km and a length of 853km ^[6]. It similarly has an enormous network of inland waters like rivers, flood plains, natural and man-made lakes and reservoirs ^[7]. However, the whole production of the rivers and lakes is flying between 500,000 to 700,000 metric tons of fish per annum, but Nigeria requires a minimum of one million metric tons of fish to cater for it growing population ^[6]. Fisheries establish a significant area of agriculture in Nigeria, providing cherished food and job to millions and also

aiding as a basis of livelihoods mostly for women in rural areas [8]. However, in Nigeria, the artisanal fishery is made up of brackish water canoe fishery, coastal canoe fishery, riverine and lake canoe fishery and the flood pond fishery [9]. Mabawonku and Olomola [10] reported that artisanal fishery sector accounts for about 87% of the total fish production in Nigeria.

Fish production in Nigeria, like in several other third world countries, is considered a main source of food [11], source of poverty reduction or total eradication of poverty [12], and it is currently undergoing some form of modernization. Over the past two decades, researchers have been struggling with defining the terms subsistence, traditional, artisanal and small-scale fisheries, and many of these terms are used interchangeably [13, 15]. Notwithstanding the significance of the fishery resources for sustenance most of the fishing and non-fishing communities in the third world countries including Nigeria, the resources have been allowed to degrade slowly and continuously for decades [3]. Therefore, the aim of this study is to provide basic information on socio-demographic,

Socio-economic and gears used by artisanal fishermen of Kebbi state inland waters for proper management.

Materials and Methods

Description of the study area

Kebbi state is situated in the extreme north-western of Nigeria. It lies between latitude 13°54' 58.93" to 11°07' 27.00" N and longitude 3°32' 58.00" to 4°53' 19.71" E (Figure 1). It covers approximately 18,591 km² with a population of about 2,757,544 million people [16]. The mean annual temperature range between 35 °C and 40 °C, while the annual rain fall range between 450 mm and 1,050 mm. Relative humidity in the Kebbi state range from 51% to 79% during the rainy season, while 10% to 25% during the dry season. The vegetation can be classified as Sudan savannah type of vegetation and the soil is semi-arid type of soil, characterized by frequent weathering and leaching due to poor soil structure and low organic matter contents. The main economic activity is agriculture and over 70% of the people practices different type of agriculture activities.

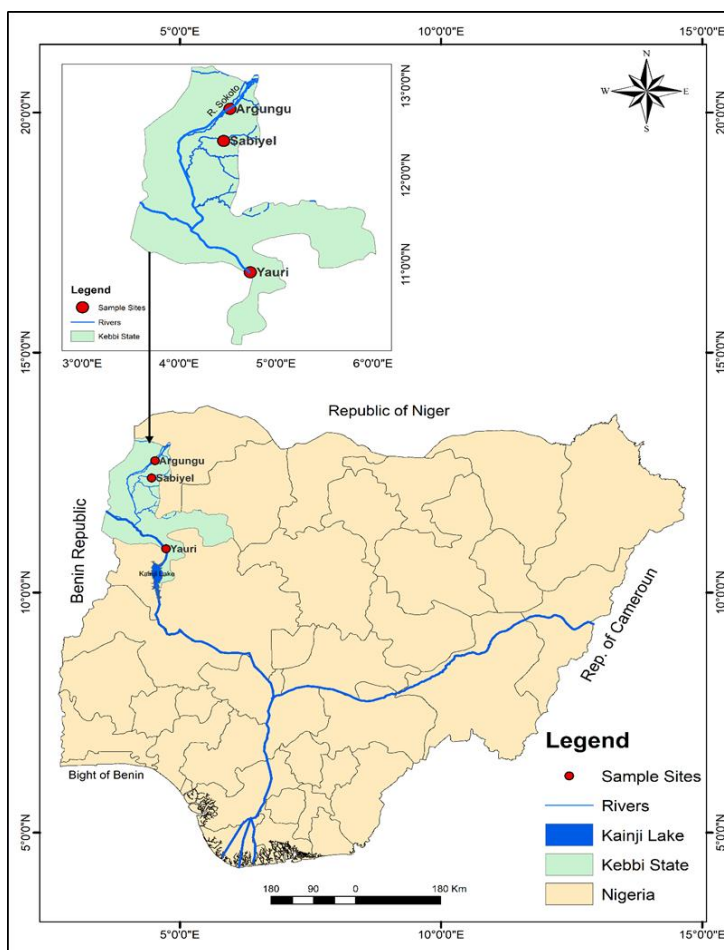


Fig 1: Map of the study area in Kebbi state, Nigeria

Sampling methods and sampling size

The sampling methods were based on the positive and random sampling methods. Three major fishing communities were selected based on their active participations in fishing activities and should be considered as high throughout the year (Table 1). A total of 100 fishermen were selected in random in each fishing community with a total 289 fishermen who responded to the survey questions became the participants of the study.

Table 1: Latitude and longitude of the sampling stations

	Station	Latitude	Longitude
S1	Argungu	12.74501	4.523333
S2	Sabiyal	12.40194	4.442778
S3	Yauri	10.83667	4.735556

Data collection

The data that were collected during the survey include: the fisher’s socio-demographic backgrounds such as gender, religion, education level, age, marital status, number of wives,

children and, other dependence. On the economic aspect, data that were collected include: the number of years of fishing experiences, other occupations, involvement in fishing activities and total monthly income.

Fishing gear information

The fishing gear information were obtained by asking the fishermen based on these information: Type of fishing gear used, its mesh size, type of fish captured, number of the individuals that operated the gear, type of water bodies and seasons of usage, which it is used was surveyed by one to one interviewed with the fishermen. The fishing gears were characterized into different major groups of active and passive fishing gears.

Data analysis

The data obtained were analyzed based on descriptive statistics using the frequency and percentage distributions using the SPSS software version 16.0. And Microsoft excel for Triplot of principal component analysis (PCA).

Results

The results for the socio-demographic status of small scale fishermen in the Kebbi State revealed that, 97.9% of the fishermen were males, Muslims and the of Hausa tribe (Table 2). In terms of age, 31.8% were in the age group of 31 to 40 years old, while 20.4% were above 51 years old. The rest were between 10 to 20, 21 to 30, and 41 to 50 years old. The results for the educational status of the fishermen showed that all of the fishermen had some formal education, especially in Islamic field of studies (41.9%), and 58.1% of them finished their schools. Among all of the fishermen sampled, only one of them is widow, while the rest were married (92.7%) or still

single (6.9%).

For the socio-economic status, the result shows that majority of the fishermen (97.9%) were engaged in the fishing activities as their main occupation. In respect to the years of fishing experiences, 43.6% of the fishermen have been involved in the fishing activities for more than 20 years, while only 2.1% of them involved in the fishing activities for less than six years. This indicates that the fishermen of Kebbi State were part-time in fishermen (less than 11 hours/day), but they went daily (71.3%) as shown in (Table 3). Income wise, all fishermen in the study sampled earned above the United Nations poverty baseline, which was more than USD 1.00 of income per day.

On the other hand, a total of 11 different types of fishing gears were revealed in this study. The percentage of the fishing gears used by the small-scale fishermen in the Kebbi State was illustrated in Figure 2. These include gill net, surrounding net, cast net, beach seine net, trap net, gura trap indurutu, hook & line, ara trap and kawari. Trap net was the most gear used by the fishermen (28.8%), and this was followed by the gill net and draft net, with 19.1% and 10.1% of the fishermen used them respectively.

Gear use and social features relationship

Several response variables were included to obtain results for the gear used and results for the social-economic characteristics of the fishermen. These include: the gill net, hook & line, cast net and surrounding net, while the other variables were the age of the fishermen, number of households, marital status and membership of cooperative society (blue capital letter). Fishers that use gill nets, cast nets and hook & line tend to belong to a cooperative society, be older, married and with larger households (Figure 3).

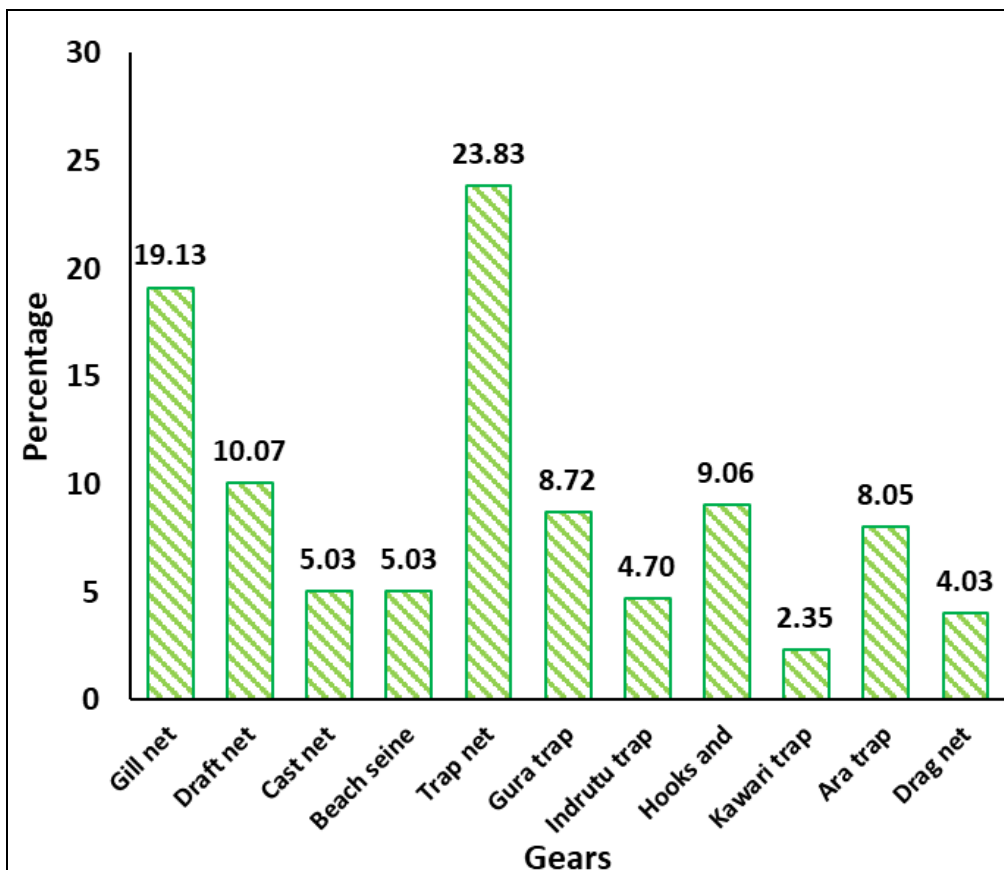


Fig 2: Fishing gears used by the small-scale fishermen in the Kebbi State.

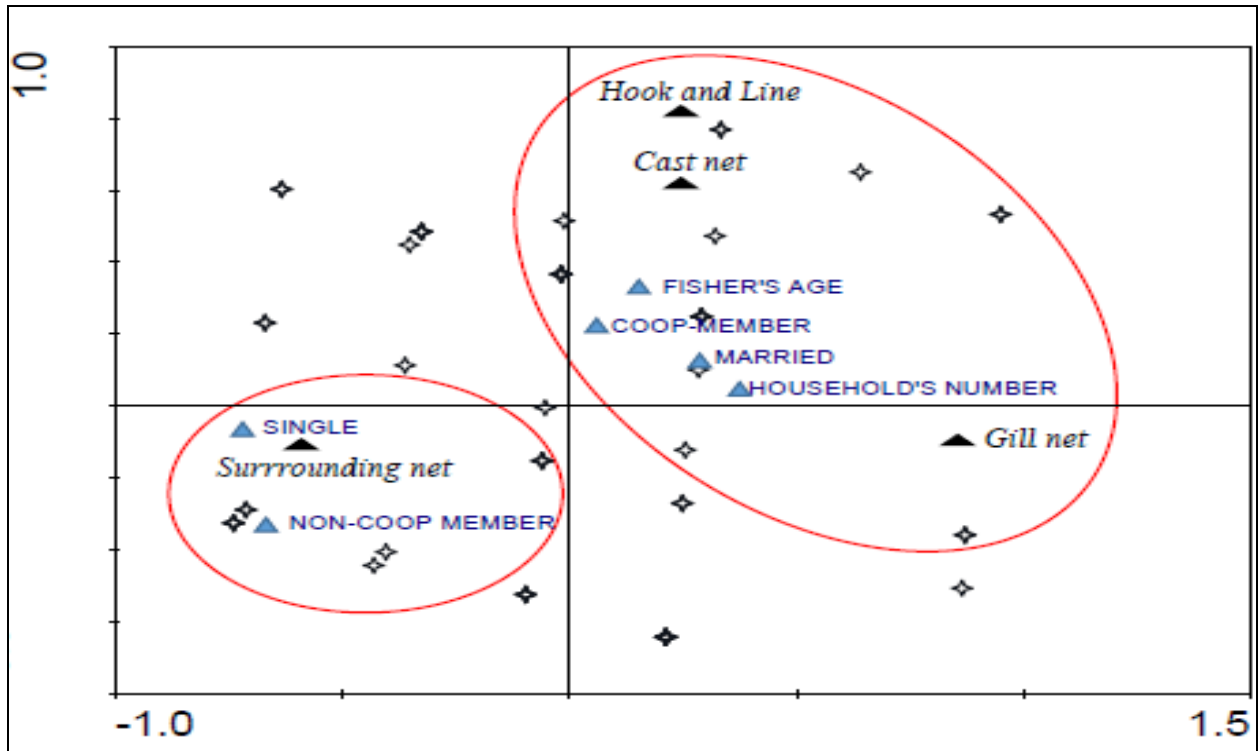


Fig 3: Triplot of PCA, of the gear used and the main social-economic characteristics of the fishermen in the Kebbi State, Nigeria.

Table 2: Basic socio-demographic status of the small-scale fishermen in the Kebbi state.

Variable	Frequency	Percentage
Gender		
Male	283	97.9
Female	6	2.1
Age		
10-20	4	1.4
21-30	61	21.1
31-40	92	31.8
41-50	73	25.3
51 Above	59	20.4
Marital status		
Married	268	92.7
Single	28	6.92
Widow	1	0.35
Educational status		
Primary school	68	23.5
Secondary school	40	13.8
High school	60	20.8
Islamic school	121	41.9
Religion		
Islam	289	100
Christian	0	0
Others	0	0

Table 3: Socio-economic status of the small-scale fishermen in Kebbi state.

Variable	Frequency	Percentage
Major occupation		
Fishing	283	97.9
Processing	6	2.1
Years of fishing		
0-5 years	6	2.07
6-10 years	20	6.92
11-15 years	38	13.15
16-20 years	99	34.26
20 years and above	126	43.60
Involvement in fishing activities		
Full time	142	49.1
Part time	147	50.9

Fishing expedition		
Daily	206	71.28
weekly	83	28.72
Monthly	0	0
Yearly	0	0
Membership of co-operative societies Members	233	80.6
Non-members	56	19.3
Total income		
Low	143	49.5
Medium	82	28.4
High	64	22.1

Discussion

The characteristics of the fishermen in Kebbi state should be classified under the 'artisanal fisheries', which similar to the other small scale fishermen that exist in Nigeria and other African countries, in general. The fishermen in the Kebbi state used simple fishing gears and equipment, and they catch in a small quantity of fish, which just enough for their subsistence purpose and small scale commercial purpose. Similarly, Tafida *et al.* [17] identified that the fishermen of Kainji Lake as belongs to the group of artisanal fishermen. The same group of fishermen were also reported exist in the arid region of Katsina State [18].

Most of the fishermen are Muslims because Kebbi state is a Muslims dominated region, and the religion does not prohibit fishing profession to its followers. The fishing activities in the Kebbi State also were dominated by males because of religious and socio-cultural reasons, which limits the involvement of women in fishing activities. Similar observation was reported by Sraboni *et al.* [19] on women's empowerment in agricultural activities in Bangladesh. This is contrary to the other research findings, were reported that a large number of women participated in the fish processing activities within the fishing communities of Lake Feferuwa, in the state of Nasarawa, Nigeria. Olapade [20] reported that women play some significant roles in artisanal fisheries in Asejire River, in the state of Oyo, Nigeria.

Meanwhile, the data obtained in the study indicated that the fishermen were represented by the age group of 31 to 40 years old (31.8%), which should be considered as the middle age group of fishermen. This would probably due to the lack of alternative jobs available in the area, especially for the middle age groups of the community. The similar findings of a high proportion of the middle age group which involved in artisanal fishing was also reported by Ahmed [21] in Uganda.

This study also revealed that almost all of the fishermen (92.7%) were married and most of them have many children and other dependents, which depend on their fishing activities to survive. Similar finding was reported by Bolorunduro [22] among the fishermen community in the state of Niger, Nigeria. The study also revealed that the majority of the fishermen (97.9%) engaged in fishing activities as their major occupation. This could be due to the high amount of fish that were caught every year that could sustain the livelihoods of the community. Similar finding was reported by Tafida [17] however, they provide with some useful recommendations for the fishermen to create some enterprise diversification activities, rather than depending on the fishing activities alone.

All of the fishermen sampled in this study lives above the poverty baseline income as set up by the United Nations, which was more than USD 1.00 per day. A similar finding was reported in Bangladesh where the fishermen generate a high revenue as a result of fishing practices in the country [21].

However, almost half of the fishermen who fish in sub-Saharan Africa (49%) live below the poverty baseline income, with a daily income of less than USD 1.00 (Clemens, *et al.* [23]).

A total of 11 different gear types were used by the fishermen in this study. These include the gill nets, cast nets, hook and line, traps, surrounding nets, beach seine nets, draft nets, drag nets and Gura. All of the gears have been revealed by du-Feu & Abiodun [24] and Ogundiwin [25] in their previous surveys within the fishermen community of the inland waters in Nigeria. These were the most common fishing gears used by the artisanal fishermen in the Kainji Lake and the Lake Chad basin in Nigeria [12, 26].

Recommendations

Fisheries management should therefore not only focus on the stock status, species diversity, and exploitation pattern and rate of the fishery resources, but also on human aspects of the fishermen. For instance, if one would ask about the 'value of fish', then it would be reasonable to recognize not only the fish as a resource, food items, or a commercial commodity, but also the opportunities that the 'fish' could provide to the fishers in sustaining their livelihoods, including to their significant others in the community. The impact of fishing on fisher's livelihoods should be among the principle considerations in assessing the value of fish and the way the fisheries are managed. Fishing is so valuable and it is also enhancing the quality of human life. There is a need to develop some policies aimed at managing the fisheries through enhanced education and diversification of income. Policies should be formulated in a manner that it will enable the fishers to make sustainable decisions of their own, and not forced on them. Fish preservation and processing equipment should be available to fishermen and women community in the Kebbi state region, to engage the people to the additional value of the fisheries, such as fish production rather than selling off the fish as fresh. Fishermen should be encouraged to form several cooperative societies for ease of education, extension services and fishing inputs acquisition among the community.

Conclusion

From the results, it can be concluded that the socio-economic characteristics of the fishermen who involved in the fisheries activities in the Kebbi State can be classified as 'artisanal fisheries' and they are somewhat similar to the other artisanal fishermen exist in Nigeria, in general. This study should provide some basic data and base-line information to the government and non-government organizations who managed the Kebbi state, especially the inland waters and its fishery resources. This also would be useful for future fisheries planning and research, in particular on the livelihood aspect of the fishermen in the Kebbi state, Nigeria.

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