



# Assessment of Artisanal Fisheries Activities among Fisherfolks in Borgu Local Government Area, Niger State, Nigeria

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## Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

Fish is a veritable source of high-quality protein and essential vitamins and minerals that are crucial to metabolic activities in human system. This study assessed artisanal fishery activities among fisherfolks in Borgu Local Government Area, Niger State, Nigeria. Specifically, the study described the socio-economic characteristics of artisanal fisherfolks, examined the fishing practices employed by the artisanal fisherfolk, examined the fisherfolk's perception on current level of fish production and investigated the problems/challenges facing artisanal fishing activities in the

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study area. A well-structured interview schedule (questionnaire) was used to elicit information from 110 artisanal fisherfolk randomly selected in the study area. Data collected was analysed using descriptive statistics in form of frequencies and percentages. Findings from the study showed that fishing in the study area was dominated by males (90) representing 81.8% of the respondents, and 33.6% of the respondents were in the youthful age bracket of 36-45 years of age. In addition, majority of the respondents have formal education, with 30.9% of them having completed secondary school, while 59.1% of the respondents were married. Furthermore, majority of the respondents (73.6%) took artisanal fishing as their main source of livelihood. The fishing systems employed by the artisanal fisherfolk included the use of canoes and motorized boats with those using canoes dominating (80.9%). This data already revealed that 73.6% of the respondents are into artisanal fishing for job creation which have reduced migration to urban cities and increase economic activities in their communities, thereby providing skilled and unskilled jobs and foreign exchange for the country while reducing youthful restiveness and anti-social activities. Young entrepreneurs have seen this opportunity, as seen in the result of this study, and are taking it up as a viable business. However, the study revealed that the fisherfolks in the study area usually lack basic social amenities and employ the most traditional gears and crafts in the fishing activity, and therefore, there is need for government to intervene and provide the most basic social amenities like roads and electricity to the communities.

*Keywords: Artisanal; Borgu; Fisheries; Nigeria; Youths.*

## 1. INTRODUCTION

Fish production in Nigeria comes from three sources: artisanal (inland rivers, lakes, costal and brackish water), aquaculture (fish farm) and industrial fishing [1]. Over the years it has been reported that a larger proportion of Nigeria's total domestic fish production is generated by artisanal fisheries. In 2015, the total domestic production was 1.027,058.00 million metric tonnes. Artisanal fishery contributed 67.7% (694,867.00mt); aquaculture fishery contributed 30.8% (316,727.00mt) and industrial fishery contributed 1.5 % (15,464.00) [2]. However, Artisanal fishery is the most important subsector of fishery production in Nigeria and accounts for over 90% of the country's fishery production [3].

Artisanal fisheries are fish catching operations usually carried out with canoes and simple fishing gears. The artisanal fishery is characterized by use of low technology fishing gears with fish catch range of 5 nautical miles of seashore [4,5]. Fish distribution network is very poor, local market oriented: low revenue generation but with easy availability of fresh fish to the rural communities and consumers along coastal and inland towns and cities. Thus, Artisanal fisheries worldwide account for significant source of food for sustaining human well-being over the years.

Fish makes vital contribution to the food and nutritional security of 1.2 billion Africans and provides income for over 20 million people

mostly small-scale fisher folk and entrepreneurs engaged in fish production [2]. Similarly, FDF (2018) also stated that the subsector provides employment for 8.632 million people in the primary sector and 19.5 million people in the secondary sector. In Nigeria, fisheries contributed 0.8% to Agricultural Gross Domestic Product (FDF, 2018). More so, in the past, fishery production generates foreign earnings through exportation of shrimps, prawns and other elitist species [2,6] reported that fish contributes to over 70% of the world animal protein intake of the people with per world animal protein intake of 10 kg per day.

Despite the importance of fish to man and the society at large, Nigeria is not producing enough fish for consumption mainly due to the fact that fish production from marine and traditional artisanal fisheries have not yet been developed substantially to the extent of bridging the gap between demand and supply to cater for the ever-increasing Nigerian population, [2].

The low domestic fish production is attributed to the dominance on artisanal fishing which is characterized by the use of crude fishing gears and equipment accompanied with low catch. In addition, post-harvest losses and credit facilities to fishermen in this enterprise that may encourage them to adopt new innovations is not easy to come by Ajao, [7]. An important factor identified as contributing to this scenario is lack of adequate information on modern fisheries practices among the artisanal fisher folk.

In addition, George, *et al.* [8] observed that outside the World Bank assisted Agricultural Development Programs, there is no organized extension service for artisanal fisheries in Nigeria. It is desirable to consider the significance of artisanal fishery to local fish production in Nigeria. This study is therefore, aimed to assess artisanal fishery activities among fisherfolk in Borgu Local Government, Niger State, Nigeria. Assessing artisanal fisheries activities among fisherfolk will help generate information that can assist the policy makers to improve or otherwise the profitability of artisanal fisheries activities in the study area. Consequently, it will encourage fisherfolk on the importance of education and as well look in the major challenges or threat faced by artisanal fisherfolk and provide basis for developing policies and strategies on artisanal fishing that will enhance the standard of living of the fisherfolk in the area.

## 2. METHODOLOGY

### 2.1 Study Area

Borgu Local Government is an administrative region in Niger State, Nigeria, with its headquarters in New Bussa. It has a population projection of 296,500 according to the 2022 National Population Commission figures. Borgu Local Government has an area of 11,267km<sup>2</sup> with a density of 21.55/km<sup>2</sup>. It lies in the northwestern area of the state and covers the districts of Borgu, Dugga, Babanna, Karabonde, Konkoso, Malale, New Bussa, Shagunu, Wawa and Riverine areas. Borgu Local Government is bordered by Agwara, Mashegu and Mokwa Local Governments. Borgu Local Government Council controls the public administrative council makes law that governs the local government area.

### 2.2 Method of Data Collection

Primary data was utilized in this study. The primary data was collected with the use of 110 structured questionnaire designed to address the objectives of the study which is complemented with interview schedules. The questionnaire contained both open and close ended questions (in order to give the respondents opportunity to answer the questions freely) which elicit answer to questions concerning demographic Information and non-demographic information, which borders on fishing activities and problems encountered. A simple random sampling method

was employed in administering the questionnaire.

## 2.3 Data Analytical Techniques

The primary data collected with the aid of well-structured questionnaires administered on artisanal fisherfolks was analysed using SPSS Software by employing descriptive statistics, frequencies, and percentages.

## 3. RESULTS AND DISCUSSION

Section A: Demographic information of respondents.

The results of the investigations were presented in eight tables above. Table 1 shows the selected personal characteristics of the respondents. Response on the age bracket revealed that majority (33.6%) of the respondents in the study area fall within the age bracket of 36-45 years, followed by 26-35 years of age bracket with 26.4% of respondents, 46 years and above age bracket has 23.6% while 18-25years age bracket has 16.4% respondents. The age range of the fisherfolk sampled from the study area conformed to the economically active and productive age of the country's work force or labour force as reported by FAO [9]. This implies that most of the fisherfolks were within their active and productive age group for efficient fish production. The result equally indicated that most of the fisherfolks were within the economically active age of the population and therefore, constitutes a good labour force in fish production, since efforts are being made to increase fish production from the artisanal sector by the Federal Government of Nigeria in recent years [8].

Most of the respondents in this study had one level of education or the other. Kasali *et al.* [10] described education as an essential economic and social tool for development. It is a continuous process of growth and also plays a key role in technological adoption. Response on level of education shows that secondary school leavers have the highest with 30.09% followed by those who drop out of secondary school and those who completed Primary Education respectively, both of which have 21.8% representation, while those with no formal education and those with tertiary education respectively had the lowest representation of 12.7% each. This result implies that the fisher folks would have basic knowledge in the fishing operations and would be easier for them to adopt

innovations from extension agents and research institutes for efficient productivity. The call for a great increase in domestic fish production from inland waters in the country can only be successfully achieved through education. Education aids sustainable development [11].

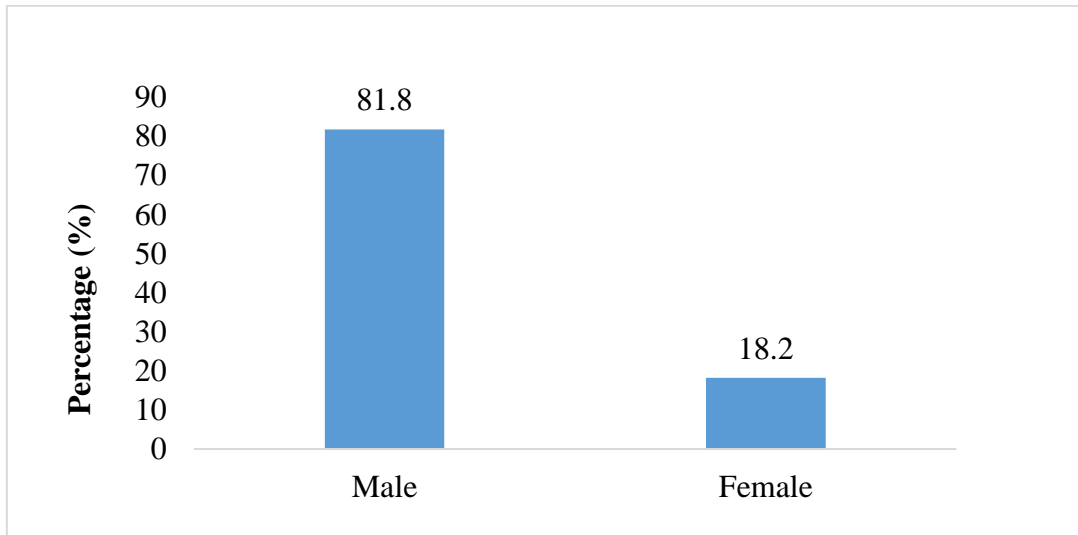
Response on occupation indicates that 73.6% engages in Artisanal fishing while 17.3% engages in Crop farming while a little as 9.1% are traders. This indicates that most of the respondents are artisanal fishermen and take crop farming and trading as an alternative source

of income. This finding agrees with the report of Okeowo *et al.* [12] in Lagoon waters of Epe and Badagry Areas of Lagos State, Nigeria. An implication that the fisherfolks in this study area do not rely on fishing as the only source of income to meet the daily demands of their household. Alternative source of income becomes imperative and necessary. Considering the fact that majority of the respondents were into fishing, some of them were also engaged in farming and do get back to fishing when they have free time between harvest and planting season.

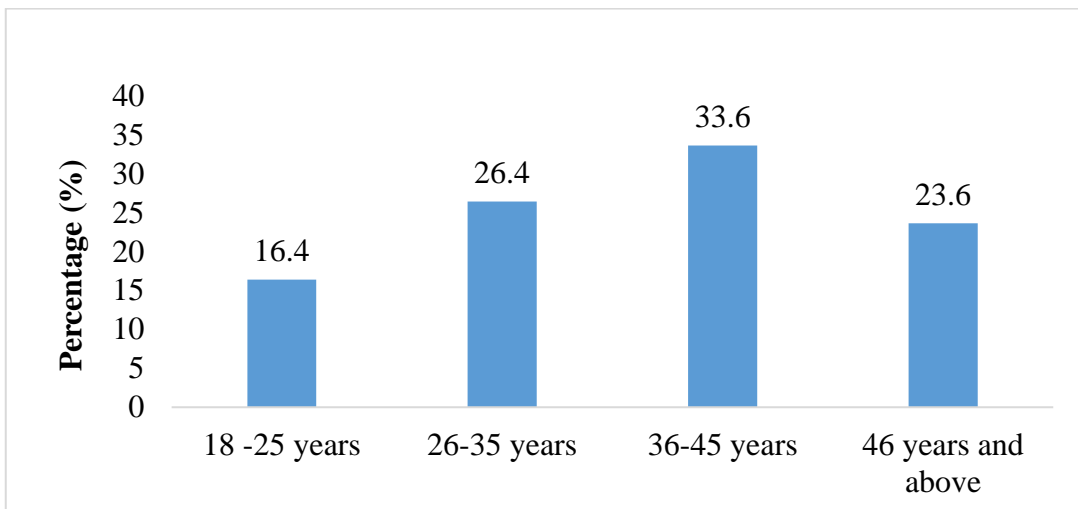
**Table 1. Personal characteristics of the respondents**

<b>Parameter</b>	<b>Number of respondents</b>	<b>Percentage (%)</b>
<b>Sex</b>		
Male	90	81.8
Female	20	18.2
Total	110	100.0
<b>Age Bracket</b>		
18 -25 years	18	16.4
26-35 years	29	26.4
36-45 years	37	33.6
46 years and above	26	23.6
Total	110	100
<b>Level of Education</b>		
No formal Education	14	12.7
Primary Education	24	21.8
Secondary Education (Complete)	34	30.9
Secondary Education (Incomplete)	24	21.8
Tertiary Education	14	12.7
Others (Please specify)		
Total	110	100
<b>Occupation</b>		
Artisanal Fishing	81	73.6
Crop Farming	19	17.3
Trading	10	9.1
Total	110	100
<b>Marital status</b>		
Single	19	17.3
Married	65	59.1
Divorced	10	9.1
Widowed	16	14.5
Total	110	100
<b>Are you migrating in your fishing activity?</b>		
Yes	76	69.1
No	34	30.9
Total	110	100
<b>Number of family members</b>		
1 -3	6	5.5
4-6	32	29.1
7-9	53	48.2
10 above	19	17.3
Total	110	100

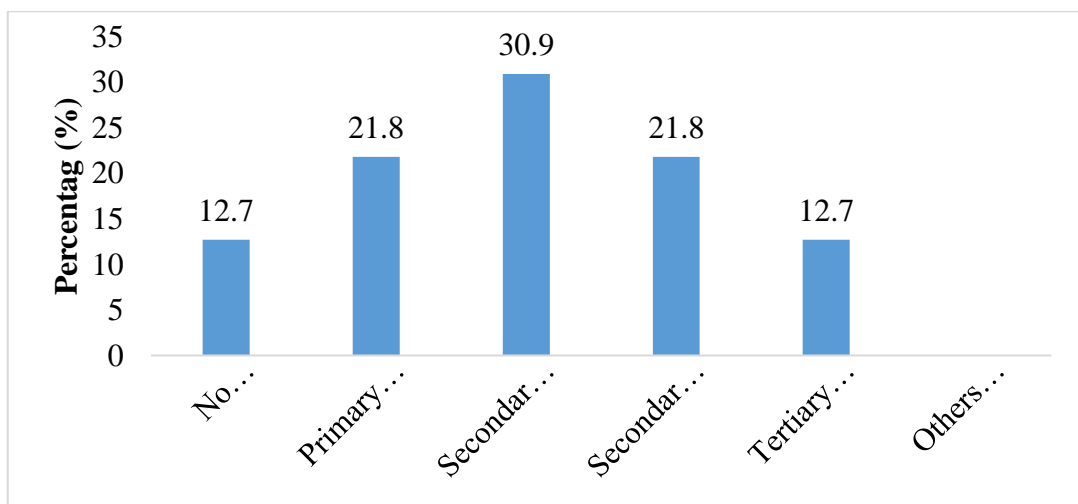
Source: Field survey, 2022



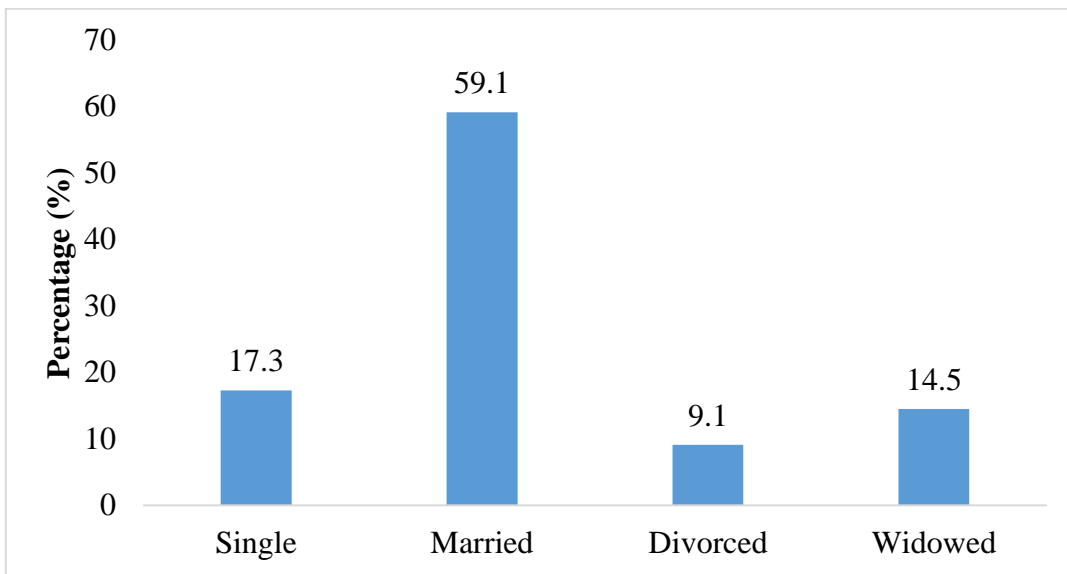
**Fig. 1. Sex of respondents**



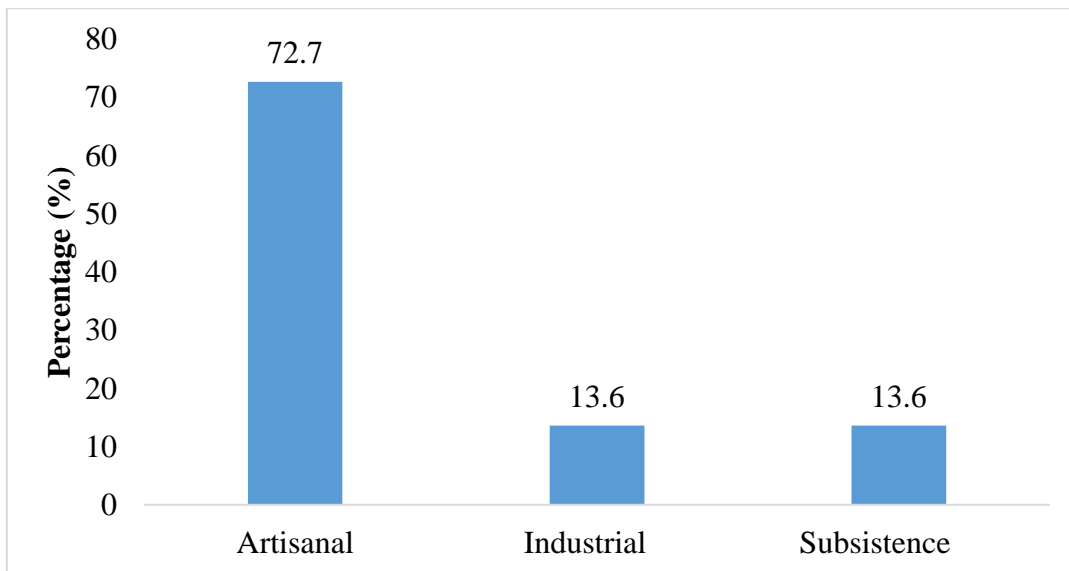
**Fig. 2. Age of respondents**



**Fig. 3. Educational status of respondents**



**Fig. 4. Marital status of respondents**



**Fig. 5. Type of fishing activity of respondents**

**Table 2. Social amenities within the study area**

Items	Yes	Percentage (%)	No	Percentage (%)
Do you have a school in your locality	101	91.8	9	8.2
Primary	101	91.8	9	8.2
Secondary	89	80.9	21	19
Both	89	80.9	21	19
Is there a health Centre/Clinic?	109	99.1	1	0.9
Do you have a marketplace?	110	100.0	0	0.0
Is there a jetty at your landing point?	86	78.2	24	21.8
Is there a road network linking villages in your locality?	81	73.6	29	26.4
Do you have a meeting place?	109	99.1	1	0.9

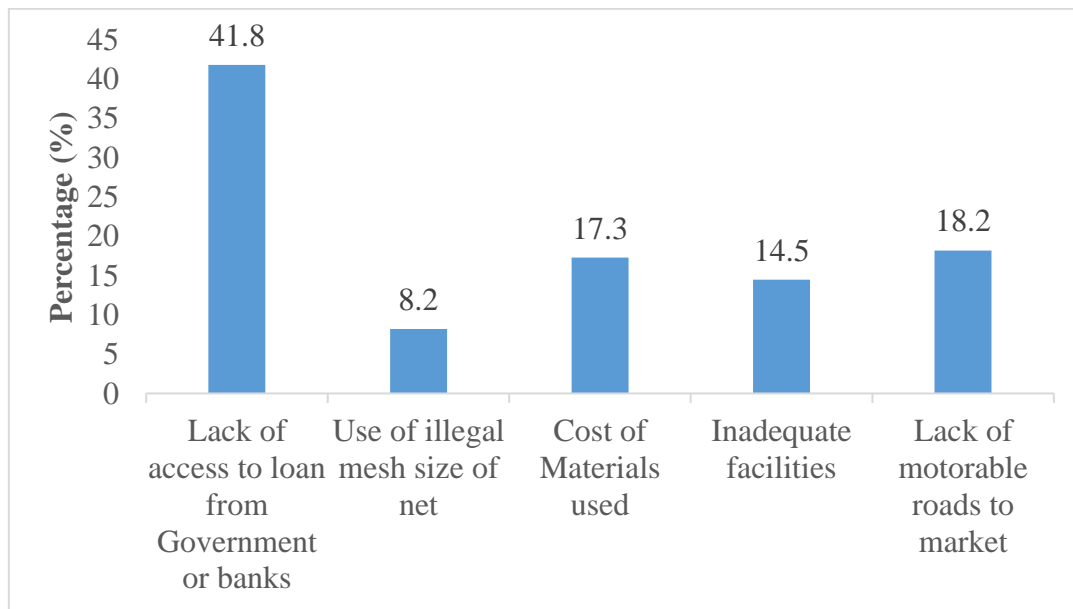


Fig. 6. Problems encountered by the respondents

Table 3. Fisherfolks fishing practices in the study area

Type of fishing	Frequency	Percentage
Artisanal	80	72.7
Industrial	15	13.6
Subsistence	15	13.6
TOTAL	110	100
Type of fishing crafts mostly used	Frequency	Percentage
Canoe	89	80.9
Boats	21	19.1
TOTAL	110	100
Age of Crafts	Frequency	Percentage
1 Year	68	61.8
1 <sup>1/2</sup> Years	24	21.8
2 years	18	16.4
TOTAL	110	100
Mode of Propulsion	Frequency	Percentage
Paddle and Pole	91	82.7
Outboard Engine	18	16.4
Wind Skills	1	0.9
TOTAL	110	100
Cost of Craft	Frequency	Percentage
₦12,000 - ₦15000	29	26.4
₦16,000 - ₦17,000	68	61.8
₦18,000 - ₦20,000	13	11.8
TOTAL	110	100
Place of Purchase	Frequency	Percentage
Malale	91	82.7
Fakun	19	17.3
TOTAL	110	100
Types of fishing gear employed in fishing	Frequency	Percentage
Cast net	33	30
Long line	9	8.18

Type of fishing	Frequency	Percentage
Malian Traps	14	12.73
Gillnet	52	47.27
Others	2	1.82
TOTAL	110	100

**Table 4. Benefits derived from resettlement programme**

Benefits Derived	Always	%	Sometime	%	Not at all	%	Total
Occupation	86	78.2	12	10.9	12	10.9	110
Source of Income	99	90.0	8	7.3	3	2.7	110
Self-reliance	48	43.6	48	43.6	14	12.7	110
Housework	59	53.6	46	41.8	5	4.5	110
Irrigation	60	54.5	32	29.1	18	16.4	110

**Table 5. Percentage distribution of the benefits derived from respondents' spouse**

Benefits derived	Frequency of derived benefits	Percentage (%)
Assist in processing	72	65.5
Selling of fish	90	81.8
Assist in training the children at home	110	100.0
Assist in training the children at School	56	50.9
Cooking of food	110	100.0
Washing of cloths and plate	110	100.0

**Table 6. Distribution showing the benefits derived from respondents' children**

Major benefits derived from children	Frequency of derived benefits	Percentage (%)
Processing of fish	30	27.3
Assisting in Settling net and amendment	60	54.5
Selling and marketing of fish	9	8.2
Cutting of grasses for the cows	25	22.7
Removing fish from net and boat canoe	15	13.6

**Table 7. Percentage distribution of problems encountered by fisherfolks**

Problems encountered by fisherfolks	Strongly agree	Agree	Disagree	Strongly disagree
Receding of water position	6.4	40.3	31.9	5
Cost of transportation to water site	12.7	15.1	33.3	23.5
Use of small mesh size of net	7.7	73.9	5	5

**Table 8. Percentage distribution of the priority of problems in artisanal fisheries**

Problems in artisanal fisheries	Frequency of derived benefits	Percentage (%)
Lack of access to Loan from Government or banks	46	41.8
Use of illegal mesh size of net	9	8.2
Cost of Materials use	19	17.3
Inadequate facilities for irrigation	16	14.5
Lack of motorable roads to market	20	18.2
TOTAL	110	100.0



The result of this study revealed that majority of the fisherfolk (59.1%) in the study area are married, 17.3% are single while 14.5% are widowed with 9.1% being divorced. This indicates that artisanal fishing is a marital dominated occupation as observed also by Onemolease and Oriakhi [13]. This affirms the fact that the marriage institution is highly valued and a pointer of economic responsibilities of the respondent in caring for their dependents Jibowu [14] Okeowo *et al.*, [12].

Fisherfolks in the study area have garnered fishing experience that spanned from 3years to 16years but those that have more than 6 years fishing experience are over 50% of the respondents which collaborates with artisanal fishing as their major occupation. This finding is in line with the findings of Udoh and Nyienakuna, [15] that experienced fishers have ready and precise information on fishing ground, water current and where fishes are more in abundance in a particular period of time. On the other hand, Olaoye *et al.*, [16] reported that good skills and better approaches to fish farming business are expected with more years of experience.

The percentage distribution of respondents that responds to social amenities and fishing facilities in their surroundings shows that 91.8% of the respondents have school in their locality while 91.81% have Primary school and 80.9% have Secondary which implies that same 89% have both Primary and Secondary in their various locality but a little percentage have no school as indicated in Table 2 above. 19% of the respondents have neither Primary nor Secondary in their locality. 99.1% have access to medical care due to the presence of Health centre/ Clinic but 1% have no access to Clinic, as also observed by [17].

All the respondents have market in their locality, this implies that there is a ready market for the artisanal farmers to sell their harvest, but the price and demand is not encouraging. 78.2% have a jetty at their landing point but 21.8% have either no jetty or landing site. 73.6% accepted that they have access roads that link their villages and neighboring communities while 26.4% have no link of roads within their communities, which makes it difficult for them to move their harvest to the nearby market, which affects their means of livelihood. 99.1% of the respondents have meeting place but only 0.9% have no meeting place. The respondents have a meeting place where decision reached on happenings around them are discussed [18].

Majority of them uses canoe (80.9%) as against those that use boats (19.1%) as fishing crafts. While 61.8% crafts are within the period of one year with the least value of 16.4% of those that their crafts are more than 2 years. 82.7% of the respondent's mode of propulsion uses paddle and pole while 16.4% mode of propulsion uses Outboard Engine with the least mode of propulsion that uses wind skills. 26.4% cost of crafts they purchase is within the range of ₦2,000.00 to ₦15,000.00 while most of them purchase their craft in the range of ₦16,000.00 to ₦17,000.00 with a high value of 61.8% which indicates that they got the genuine ones within the range [19,20,21].

The benefits derived from resettlement programme shows that 90.00% create occupation for the fishermen and thereby creates sources of income which makes them self-reliant but 78.2% of them takes it as their major occupation, as corroborated also by [20]. 10.9% did not take it has occupation and 29.1% sometimes benefits from the irrigation projects in their community. The housework of fishermen as party only 53.6% are engage at home while most are fishing due to large farms but very few enjoys the irrigation fishing as some are able to acquire pumping machines that are used for irrigation purposes.

The major benefits derived from their children are as outlined and over 50% agreed that their children assist them mostly in setting net and amending the tore nets for next fishing expedition, this is followed by cutting of grass for cows and other domestic animals which serve as an alternative for them. Their children assist in providing the feeds for those animals, but they are not too involved in selling and marketing of the harvested fish as this is mainly the job function of their mothers who process by cutting into slices, smoking, salting and drying for the purpose of either marketing or consumption. While 13.6% help in removing fish from net and boat after harvest, though this is done by both the father and the kids. This corroborates with the findings of [19]

The problems encountered by fisherfolks in relation to resettlement are based on either agreed or disagreed by fisherman and this may be due to his or her location [21] and means of livelihood [22]. Most percentages totally agreed that the receding of water affects their catch rate during dry season because the water level reduces, and the fishes follow the water to its

destination which makes the fishermen go into deeper waters to get little harvest unlike the rainy season that they get catch closer to the riverbank. 12.7% agreed that cost of transportation to water site is a major challenge they face while 23.5% are of the opinion that the cost of transportation is not a challenge, and this is mainly because they reside along the riverine area and their various catching site is closer to their various homes, an observation also made by [21,22,23]. 7.7% opined that the use of small mesh size of net affects their harvest, and this makes most of them to resettle to places where catch is high and where the use of small mesh is officially discouraged, and the promulgation of the State edict exist.

The problems encountered by farmers are too numerous and it have been highlighted based on the priority of the challenges faced by farmers. The major problems faced by artisanal fisherfolks are lack of total access to loans and grants by Government and very high interest rate by both Government owned Banks and commercial Banks which shows the high value of 41.8%. The fisherfolks are faced with high cost of fishing materials with a percentage value of 17.3%, which have disallowed them from having large catch as expected thereby affecting market demand of fish in the market, and some fisherfolks use illegal mesh size of nets in catching fish which are supposed to grow up to table size before harvesting affect fisherfolks and fishery industry at large. Inadequate facilities show 14.5% is a problem which would have enable fisherfolk farm fish all through the year to be able to meet up the demand in the market. [19,22] Facilities that are readily available are very expensive and some go for leased which do not meet up the standard of fishing. Finally, 18.2% shows lack of accessible roads to farms and to markets and especially urban centres where products are transported to before exporting are not accessible. The state of the roads is very bad and not motorable.

#### 4. CONCLUSION

This study provides information on the fisherfolk's socio-economic status and fishing activities in the study area. Based on the findings of the study it was found out majority of the respondents (33.1%) fall within the age bracket of 36 and 45 years. This is an economic active age and it impacted on the quantity of fish catch. 59.1% are married, identifying artisanal as a marital trade. Majority of them have formal

education and the highest percentage of them (30.9%) have completed secondary school. The highest educational qualification of the fishers influenced the quantity of catch positively. The distribution of respondents by occupation showed that 73.6% are fishers, with the remaining alternating fishing with the livelihood activities of farming (17.3%), and trading (9.1%). Most of the respondents have 3 – 16 years of fishing experience, and over 50% of them have more than 6 years of experience, which is a remarkable pointer to the fish productivity. This study has addressed the existing gap of socio-economic predictors of artisanal fisheries in the study area through the discoveries of prominent predictors limiting its production and profitability. Furthermore, highest educational level, age, marital status, and fishing experience have significant impact on fishing output level in this study. Fishing experience, highest educational qualification impacted more on output of the studied area.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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