



## Analysis of Selected Socioeconomic Characteristics of Fishermen: Implications for Fish Production in Eastern Obolo LGA, Akwa Ibom State, Nigeria

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### Abstract

The study examined the implications for fish production, of some selected socioeconomic characteristics of fishermen, in Eastern Obolo Local Government Area of Akwa Ibom State, Nigeria. Both purposive and random sampling techniques were used to select 90 fishermen from three (3) fishing depots: Educwink, Elekpon and Agan-asa. Data were collected with the aid of a structured questionnaire and analysed using descriptive statistics such as frequency distribution, percentages, mean scores, charts and graphs, and analysis of variance (ANOVA) techniques. The majority (53%) of the fishermen were married, while about 41% were single. The fishermen had an average of five (5) persons per household, while those with 2 – 4 persons in a household were in the majority (54%). Artisanal fishing was the primary occupation for the majority (77%) of the fishermen, and their most important fishing tools and equipment included engine boats (3.60), cast and throw nets (3.35), and fishing rods, hooks, line and sinker (3.03). Artisan and on-farm labour were the primary occupations of about 14% and 6% of the fishermen, respectively. The majority (80%) of the fishermen were cooperators, and they belonged on average, to two (2) cooperative societies per person. The study recommended policies that provide good financial and societal rewards for fishermen, while also, providing adequate incentives for their operation such as training on modern fishing techniques, provision of credit facilities, and access to modern fishing techniques and markets for their produce.

**Keywords:** *Artisanal fishing, Marital status, Household size, Cooperatives, and Fishing tools*

### Introduction

Artisanal fishing is a very important component of the fishery subsector in Nigeria. It is a labour-intensive fishing activity, involving the use of simple, traditional and hand-operated tools and equipment, in the harvesting of fish and other aquatic life (Ekpo and Essien-Ibok, 2013; Bonjour *et al.*, 2019). It accounts for about 90% of total fish production (FAO, 2006; FDF, 2007). This provides great nutrition in meals and diets, as it is widely consumed as food, in different forms, by millions of people across ethnic, religious and political divides. Fish is rich in water-concentrated and easily digestible protein, as well as vitamins A, B, C, D and E (Olawusi-Peter, 2008; George *et al.*, 2021). It is also a cheap source of protein, relative to other animal protein sources, such as chicken, beef, pork and bush meat (Gabriel *et al.*, 2007; Akinrotimi *et al.*, 2011). Artisanal fish production is particularly important for Nigeria, where hunger, malnutrition, food insecurity and poverty predominate. Nigeria is in fierce competition with India, such that they alternate each other, as the headquarters for the world's poverty, notwithstanding that Nigeria is

less than one-sixth of India's population of about 1.3 billion people (Time, 2023). According to the World Poverty Clock, in 2018, about 87 million people in Nigeria, were living in extreme poverty (then < \$1.90 per person per day), compared to India's 73 million people (Adebayo, 2018 in Oti *et al.*, 2020). In 2022, Nigeria has 70.7 million people living in extreme poverty (< \$2.15 per person per day) representing about 33% of the country's population, behind India's 83 million extremely poor people representing only 6% of the country's population (The Cable, 2022).

Furthermore, the 2022 Multidimensional Poverty Index survey showed that 63% of persons living in Nigeria (133 million people) are multidimensionally poor, involving 72% of people in rural areas and 42% of people in urban areas (NBS, 2022). This implies that more than half of the population is deprived of income, education and basic infrastructural services. They cook with dung, wood and charcoal, rather than cleaner energy, and equally experience high deprivations in sanitation, time to healthcare, food insecurity, and

housing (NBS, 2022). Also, the 2022 Global Hunger Index (GHI) showed that the level of hunger in Nigeria is serious with a score of 27.3, ranking 103 out of 121 countries (Nwannekanma and Musa, 2022). There is therefore, a growing consensus in the literature, that increasing artisanal fish production could play a vital role in addressing Nigeria's hunger, malnutrition and food insecurity challenges (Aminu *et al.* (2017), Anyanwu *et al.*, 2022; Bonjoru *et al.* (2019), George *et al.*, 2021; Ifeanyi-Obi & Iremesuk, 2018; Lawal *et al.*, 2016). This will fast-track poverty reduction, and socioeconomic growth and development. However, this cannot be achieved without a proper understanding of the livelihood conditions of the fisher folks, especially, their marital status, household size, primary occupation, membership in cooperative society, and fishing tools and equipment. Marital status refers to the state of social classification of being either single, married, widowed, separated, or divorced. A household is the basic unit of decision-making and microeconomic analysis of the society, consisting of one or more persons, whether related or not, who live, pool and share their resources, in a single housing structure. The number of persons in a household is known as the household size. According to the National Bureau of Statistics, in 2020, there were about 43.0 million households in Nigeria (Helgi Library, 2023), with an average household size of 5.06 persons in 2019 (Statista, 2023).

Furthermore, there are varying views on what primary occupation is. However, the primary occupation is generally described as the type of work that a person does for pay most of the time, involving longer periods, relative to other occupations (Cole & Gumber, 2020). Primary occupation also serves as the main source of identity and/or income for a person or household. On the other hand, a cooperative society according to the International Cooperative Alliance, ICA (2023), is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. In this case, membership of cooperative society entails fisher folks belonging to a cooperative society. Members of a cooperative society usually belong to the same social and economic status. Similarly, fishing tools and equipment refer to materials and items used by fisherfolks that aid in the catching and harvesting of fish. They include hooks, lines, baits/lures, rods, reels, floats, nets, and boats, among others. Unfortunately, however, information on these socioeconomic characteristics, their interactions and implications for artisanal fish production particularly, in Eastern Obolo LGA of Akwa Ibom State, are highly limited (Essien *et al.*, 2018; Ifeanyi-Obi & Iremesuk, 2018). The study therefore analyzed these socioeconomic characteristics, to increase evidence-based policies in artisanal fishing in Nigeria. This will ensure increased fish production, food security and poverty reduction in the country.

## Methodology

The study was carried out in Eastern Obolo Local

Government Area (LGA) of Akwa Ibom State (Figure 1). The headquarters of the LGA is located at Okoroete town. It is located at the fringe of the Niger Delta between Imo and Qua Iboe rivers' estuaries. Eastern Obolo LGA is located within latitudes 4°28' to 4°53' north of the Equator, and longitudes 7°50' to 7°55' east of the Greenwich Meridian. It has a landmass of 117,008km<sup>2</sup> with about 184km shoreline length and the Obolo River. Eastern Obolo shares a boundary with Mkpato Enin LGA in the north, Onna LGA in the northeast, the Atlantic Ocean in the south, Ibeno LGA in the southeast and Ikot Abasi LGA in the west. The population of Eastern Obolo LGA is put at 169,202 inhabitants. The LGA has large forest reserves such as mangroves, iroko, raffia, rubber, kolanut, coconut, peas, and mangos. The average annual temperature of the area is 26°C with a relative humidity of 91%. The dry and rainy seasons are the two major seasons in the area. Fishing is the predominant livelihood activity in Eastern Obolo LGA, especially, with its many rivers and tributaries being rich in seafood. About 65% of the populace is involved actively in fishing. It is usually carried out at fishing depots. There are about six (6) fishing depots in the area. They include Educwink, Elekpon, Agan-asa, Iwoachang, Upenekang and Mkpatak fishing depots. Also, several crops are cultivated in the area such as cassava, maize, plantain, yam, citrus, and pineapple. The area has rich deposits of mineral resources such as crude oil and natural gas, with onshore and offshore oil wells at Elekpon, Iko, Otunene, Emere-oke1, and Iko-Nta/Obianga. The study employed both purposive and random sampling techniques in selecting 90 fish farmers. Firstly, three (3) fishing depots were purposively selected for the study because of their high functionality. They included Educwink, Elekpon and Agan-asa fishing depots. Subsequently, from a list of fish farmers in the depots, 30 fish farmers were randomly selected from each of the fishing depots. Data were collected with the aid of a structured questionnaire and analysed using descriptive statistics such as frequency distribution, percentages, mean, charts and graphs, and analysis of variance (ANOVA). The ANOVA model is specified in Equation 1

$$F_{\text{ratio}} = \frac{MSA}{MSE} \dots (1)$$

Where:

$F_{\text{ratio}}$  = ANOVA test statistics

MSA = mean sum of squares due to factor A (variance between the sample means, i.e. explained variance)

Factor A = household size and cooperative membership, respectively

MSE = mean sum of squares due to error (variance within the samples, i.e. unexplained variance)

## Results and Discussion

### Marital Status of the Fishermen

The frequency distribution of the fishermen according to their marital status is shown in Figure 2. Majority (53.3%) of the fishermen were married, while 41.10% of others were single. The slight majority of married

fishermen in the study is rather, a rude shock, and was unexpected, considering the high premium on marriage in African societies. In these climes, marriage is an important social status, conferring enormous rights, privileges and responsibilities on the married, such as acceptance in society, access to productive resources, providing and taking care of the family, and contributing to solving communal and societal problems. Also, a lot of family labour is utilized in agricultural production, including artisanal fishing, and marriage provides the institution and platform to establish and grow the family. More so, fishermen generally, are not of high educational qualifications and wealth, which makes marrying earlier, more alluring to them, signposting a significant life achievement and fulfilment. Worse still, people who are considered of marriageable age, but are yet to marry, are often subtly stigmatized, irrespective of their personal, physiological, psychological, financial and mental dispositions, which are important considerations in marriage. Furthermore, married people on average, are more focused and financially stable, than singles. This is of the essence in artisanal fishing, requiring some levels of investments in training and apprenticeship, acquisition of fishing tools and equipment, and registration with unions, as well as payment of taxes and levies. More so, care and provision are another dimension of the responsibility component of marriage. As such, married fishermen have confidence that through artisanal fishing, they will be fulfilling their family responsibilities, thereby becoming responsible members of society. This can motivate and provoke their commitment to artisanal fishing, unlike single fishermen who could be swayed and distracted easily. In this light, married fishermen will tend to nose for opportunities on how to impact their production and productivity, for the betterment of their households. This will result in increased fish production and productivity. Chances are, therefore, brighter that investing in married fishermen, through deliberate policies, programmes, training and interventions, could result in planned and consistent increases in artisanal fish production, thereby reducing the menace of hunger, poverty, and food and nutrition insecurity in the country. Nonetheless, a probable reason for the high proportion of singles in the study could be that average, the fishermen were quite young and in their youth. As such, many of them were still gearing up to marry. The findings of this study are in agreement with those of Lawal *et al.* (2016), Aminu *et al.* (2017), Ifeanyi-Obi & Iremesuk (2018), Bonjoru *et al.* (2019), George *et al.* (2021) and Anyanwu *et al.* (2022), which reported the preponderance of married fishermen in their studies.

#### **Household Size of the Fishermen**

The frequency distribution of the fishermen according to their household sizes is presented in Table 1. The Table showed that the fishermen had about two (2) to ten (10) persons per household, while their average household size was five (5) persons. This implies that the fishermen had a relatively small household size, and enjoyed the company of others at home, including those of them that were single. African society is characterized by

communal living, which is even more pronounced among the rural populace who depend on one another for love, care, support and provision. In this light, somebody is taking care of the home and family, at any point in time, enabling the fishermen to concentrate on fishing, for increased production and productivity. The relatively small household size of the fishermen may have arisen probably because the fishermen were in their young ages with growing families. Importantly, small household sizes intend fewer family responsibilities for the fishermen, which would leave them with more time, energy and finance to invest in artisanal fishing. As a result, there could be increased fish production and productivity. Further results showed that the majority (54.4%) of the fishermen had household size of 2 – 4 members, 31.1% had 5 – 7 members, while the least proportion (14.5%) of them had the highest household size of 8 – 10 members, and the means of these categories of household sizes were significantly different from one another. The result is in line with Anyanwu *et al.* (2022) which reported an average household size of 5 persons among fishermen in Andoni LGA of Rivers State, even though a minute proportion (5%) of them had large household size of 11 – 13 persons. However, the result is contrary to Inoni and Oyaide (2007) and Aminu *et al.* (2017), where larger average household sizes were reported, nine (9) and eight (8) persons per household, respectively. Similarly, Bonjoru *et al.* (2019) found a wide range (1 – 50 persons) of household sizes among fishermen in the upper Benue River basin of Nigeria, even though the majority (91%) of them had 1 – 10 persons per household.

#### **Primary Occupation of the Fishermen**

The frequency distribution of the fishermen according to their primary occupation is presented in Figure 3. The Figure showed that the respondents had a diversified livelihood portfolio besides fishing, such as crop farming, on-farm labourer, trading and artisan businesses. This is particularly important to the well-being of fishermen, considering the wide consensus in literature, on livelihood diversification, as an important pathway to increasing rural income, and reducing rural poverty and deprivations (Ellis, 2000; FAO and World Bank, 2001; Saha & Bahal, 2010; Oti *et al.*, 2019). According to Ellis (2000), rural livelihood diversification involves the process of constructing increasingly diverse portfolios of activities and assets by households, to survive and to improve their standard of living. Nonetheless, the majority (67.7%) of the fishermen had fishing as their primary occupation. This is an expression of confidence in the trade and profession of artisanal fishing, as a means for their survival and those of their households, as well as for their attaining fulfilment in life. It implies the fishermen would be interested and committed to improving their lots in fishing, to improve their livelihood conditions. It therefore presents vistas of opportunities for the creation of enabling environments for them to excel, mindful of the central role of human factor in production activities. This could stem outward migration from artisanal

fishing, thereby providing the required incentives for increased fish production, for food security in the country.

#### ***Cooperative Membership of the Fishermen***

The result of the cooperative membership of the fishermen is shown in Table 2. The Table revealed that the majority (80%) of the fishermen belonged to cooperative societies, and they belonged to an average of two (2) cooperative societies. Their means across various categories of cooperative membership were significantly different from one another. This implies that the fishermen were cooperators, even though the number of cooperative societies they belonged to, differed. It also implies the existence of cordial relationships among the fishermen, making it possible for them to benefit from potential extension services. Cooperative society is a veritable platform for improving the lots of members through collective action, known as a cooperative effect. Through cooperatives, members can pool resources together to access training, farm inputs, credit facilities, and process, store and market their produce, which they could not have done, individually. This impacts greatly on their farm produce and productivity. In this light, the wide cooperative membership of fishermen in the study provides ample opportunity to improve artisanal fish production in Nigeria. This could be in the areas of training for the fishermen on the use of modern fishing techniques, provision of credit facilities, modern methods of fish preservation and storage, and linkages for fishermen to access fishing tools and equipment, and market for their produce. As a result, there would be considerable increases in the output of artisanal fish production, thereby improving the condition of nutrition and food security in the country. The result of the study is similar to Ifeanyi-Obi and Iremesuk (2018).

#### ***Fishing Tools and Equipment of the Fishermen***

The mean ratings of the tools and equipment used by the fishermen are shown in Figure 4. The result shows that engine boats were the most important fishing tool and equipment of the fishermen, with a mean rating of 3.60. This is expected since fishing activities are carried out on the water, and it would be difficult to fish deep and long on the water without the use of an engine boat. The engine boats are powered by diesel or fuel-run engines, which makes for more efficient and effective fishing, compared to the hand-paddled boats which are run by human power. Also, engine boats can withstand some of the vagaries of weather which hand-paddled boats may not. This implies that the fishermen could handle and control engine boats effectively, and could therefore fish in deep waters and oceans for hours, irrespective of the times of the day. As such, given adequate incentives, the fishermen can increase their fish production and productivity through the use of engine boats. It is therefore not surprising that hand-paddled boats were not important fishing tools and equipment of the fishermen in the study. Other important fishing tools and equipment to the fishermen were cast and throw nets, fishing rods, hooks, lines and sinkers. These are

traditional fishing tools that enable fishermen to catch fish in water. However, the cast and throw nets allow for multiple fish to be caught at a time, by casting the nets inside the water and drawing them out along with fish trapped, whereas, in a fishing rod, hook, line and sinker, only one fish is caught per time. This is a great limitation to its use. Similarly, bows and arrows, as well as cutlasses were important fishing tools for the fishermen. The efficiency of fish bows and arrows is quite low, and are mostly used in shallow waters where the fish could be easily seen. Its use also allows for the catching of a fish per time, thereby constraining the productivity of the fishermen. The use of cutlasses was multi-dimensional, rather than purely as a fishing tool to catch fish. It could be used for the defence and protection of the fishermen, for removing obstacles on water, and for killing and processing fish.

#### **Conclusion**

The study examined the implications of some selected socioeconomic characteristics of fishermen, for fish production, in Eastern Obolo Local Government Area of Akwa Ibom State, Nigeria. The selected socioeconomic characteristics were marital status, household size, primary occupation, cooperative membership, and fishing tools and equipment. The fishermen were predominantly married, with small-sized households of an average of five (5) members and enjoyed a great deal of cordial relationships through membership in cooperative societies. Fishing was their primary occupation, and their most important fishing tools included engine boats, cast and throw nets, and fishing rods, hooks, lines and sinkers. Given these socioeconomic characteristics of the fishermen, the prospects for increasing artisanal fish production and productivity are bright. The study recommends policies that would provide a good financial and societal reward system for fishermen while providing adequate incentives for them to operate such as training on modern fishing techniques, provision of credit facilities, and access to modern fishing techniques and markets for their produce.

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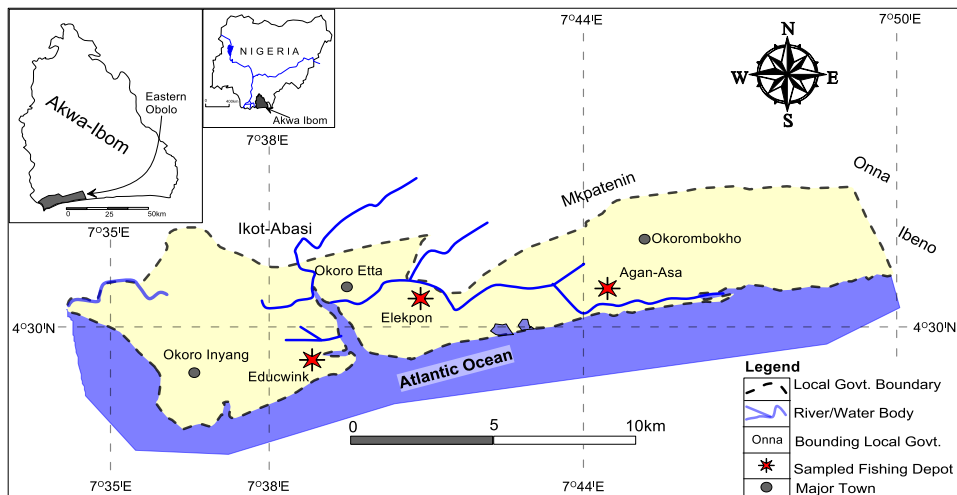
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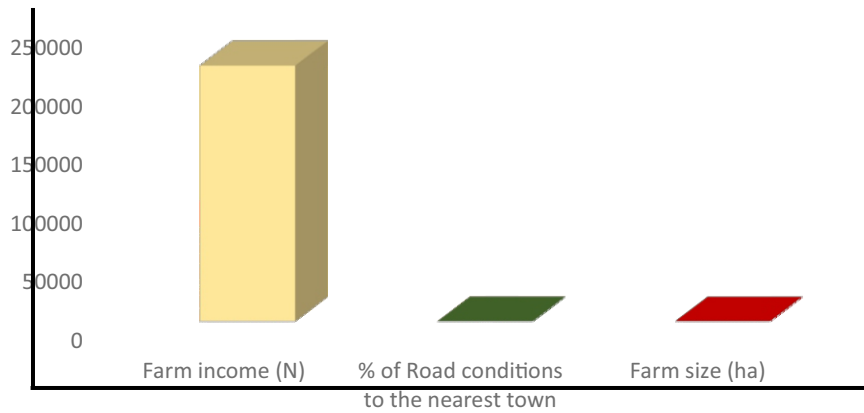
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**Figure 1: Map of Eastern Obolo LGA of Akwa Ibom State, Nigeria showing sampled fishing depots**

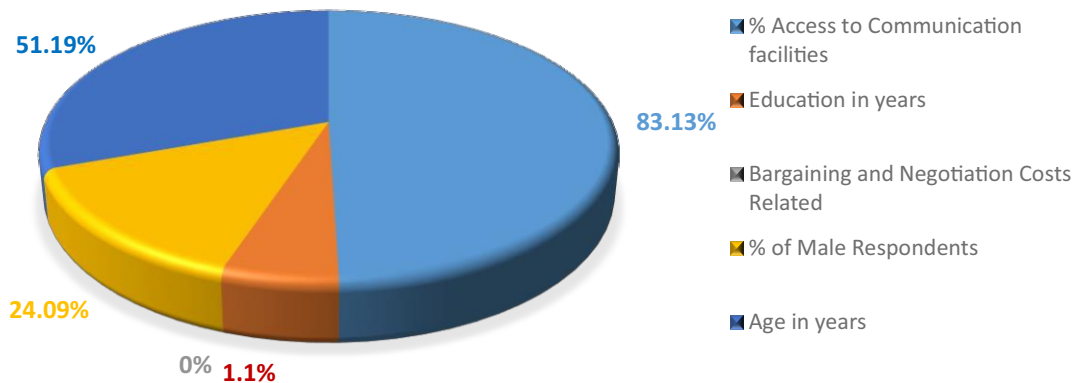


**Figure 2: Frequency (%) distribution of the fishermen according to their marital status**  
 Source: Computed from field survey, 2021.

**Table 1: Frequency distribution and ANOVA test on the household sizes of artisanal fishermen**

Household size	Frequency	Percentage (%)	Mean	F-test	Scheffe-test
a. 2 – 4	49	54.44	3.04	329.838***	b*; c*
b. 5 – 7	28	31.11	5.70		a*; c*
c. 8 – 10	13	14.45	8.86		a*; b*
Total	90	100.0	4.74		

Key: \* - mean difference is significant at 0.05 level of probability; \*\*\* - significant at 0.01 level of probability  
 Source: Computed from field survey, 2021

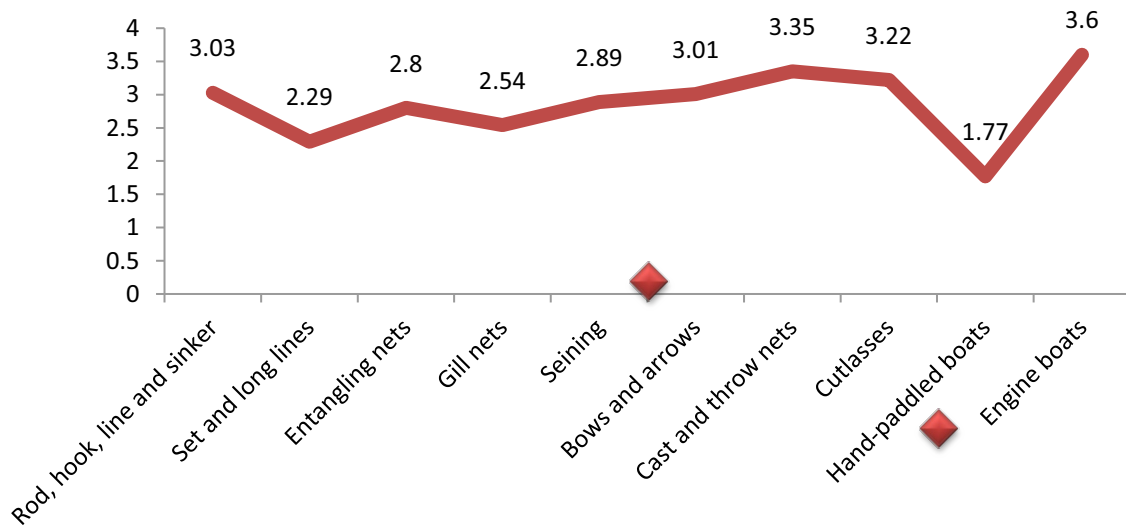


**Figure 3: Frequency distribution (%) of the fishermen according to their primary occupation**  
 Source: Computed from field survey, 2021

**Table 2: Frequency distribution and ANOVA test on Cooperative membership of artisanal fishermen**

Membership of Cooperatives	Frequency	Percentage (%)	Mean	F-test	Scheffe-test
a. No membership	18	20.00	0.00	139.408***	b*; c*
b. 1 – 2 Cooperatives	59	65.60	1.56		a*; c*
c. 3 – 4 Cooperatives	13	14.40	3.23		a*; b*
Total	90	100.00	1.49		

Key: \* - mean difference is significant at 0.05 level of probability; \*\*\* - significant at 0.01 level of probability  
 Source: Computed from field survey, 2021



**Figure 4: Mean ratings of the tools and equipment used by the fishermen**

**Table 3: Mean ratings of the tools and equipment used by the fishermen**

<b>Fishing tools and equipment</b>	<b>Mean rating</b>	<b>Decision</b>
Fishing rod, hook, line and sinker	3.03	Important
Set and long lines	2.29	Not important
Entangling nets	2.80	Important
Gill nets	2.54	Important
Seining	2.89	Important
Bows and arrows	3.01	Important
Cast and throw nets	3.35	Important
Cutlasses	3.22	Important
Hand-paddled boats	1.77	Not important
Engine boats	3.60	Important