Socioeconomic Profiling of Artisanal Fishing in Eastern Obolo Local Government Area of Akwa Ibom State, Nigeria: Sex, Age and Access to Credit Perspective

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ABSTRACT

The study conducted socioeconomic profiling of artisanal fishing in Eastern Obolo LGA of Akwa Ibom State, Nigeria, emphasizing on sex, age and access to credit facilities. Purposive and random sampling techniques were utilized in selecting 30 fish farmers from three (3) fishing depots (Educwink, Elekpon and Agan-asa), respectively, making a total of 90 respondents. Data were collected using structured questionnaire, and analysed using descriptive statistics such as frequency distribution, cross tabulation, graphs and charts. Inferential statistical tools such as chi-square and analysis of variance (ANOVA), were also used. All the fish farmers were males, while their average age was 34 years. Fishermen within the age group of 25 – 34 years, were in majority (63.33%), while the least proportion (13.33%) of them was aged, 45 – 54 years. Their average ages ($\bar{x}$ = 29.39, 38.52 & 48.42) across the various age groups were significantly (p<0.0001) different from one another. Majority (54.4%) of the fishermen had no access to credit facilities, 25.6% of them accessed ₦20,000 – ₦40,000, while 20.0% accessed ₦41,000 – ₦60,000. The average amounts of credit ($\bar{x}$ = ₦0.00, ₦37,608.70 & ₦83,777.78) in the various classes of credit were significantly (p<0.0001) different from one another. The associations between the fishermen's age and access to credit facilities was weak (V = 0.315) and significant (ar>|2|). No fish farmer within 45 – 54 years of age accessed the credit facility, ₦20,000.00 – ₦40,000.00, while about 8.8% and 58.3% of fishermen within the age groups of 25 – 34 years and 45 – 54 years, accessed ₦41,000.00 – ₦60,000.00, respectively. The study recommended policies that will stimulate women's interest and participation in artisanal fishing, while ensuring the fishing population remains youthful. Further policies should also enhance increased credit accessibility to artisanal fishermen, such that larger amounts can be accessed by younger fishermen.

Keywords: Artisanal Fishing, Sex, Age, Credit Facility, Eastern Obolo LGA

1.0   Introduction

The importance of artisanal fishing in Nigeria's socioeconomic development, cannot by over-emphasized. Artisanal fishing provides millions of households with employment and livelihood opportunities, both in the primary harvesting of fish and in its value-chain processes, such as fish processing, preservation, storage, marketing and research. It is the most important component of the fishery sub-sector, accounting for over 90% of total fish production in the country (FAO, 2006; FDF, 2007; Oladimeji *et al*., 2013; Bonjoru *et al*., 2019). Fish is widely consumed as food across all shades and divides, constituting the major source of cheap and affordable protein in the diet of most Nigerians. According to Olawusi-Peter (2008), fish is a rich source of complete protein, with a higher water concentration and easy of digestibility compared to other animal proteins, such as red meat. Also, fish is cheaper than bush meat, pork, beef and chicken (Gabriel *et al*., 2007; Akinrotimi *et al*., 2011), and contains sufficient quantities of vitamins A, B, C, D, and E (George *et al*., 2021). Increasing fish consumption therefore, is a sure pathway to increased nutrition and food security in the country, and is predicated on artisanal fishing.

Artisanal fishing is a small scale process (fishing activity) of harvesting fish and other aquatic life. It involves the use of simple, traditional and hand-operated tools and equipment such as hooks, gills, nets, baskets and wooden boats. It is usually labour-intensive, involving numerous scattered fishing units, with poor infrastructural facilities, and low capital investments, operational costs and technology (Onuoha, 2009; Ekpo and Essien-Ibok, 2013; Bonjoru et al., 2019). Artisanal fishing entails the operation of small-scale canoes, as well as fishing operating in coastal areas, creeks, lagoons, inshore water and inland rivers (Oladimeji et al., 2013; Bonjoru et al., 2019). According to

FAO (2016), the basic features of artisanal fishing include low operational cost, local technology, low capital investment and stressful labour.

The potentials and possibilities for artisanal fishing in Nigeria is unlimited, considering the country's enormous water, land and human resource-endowments. Berdgue (2016), rightly noted that potentials of the sub-sector remain largely untapped in the entire African continent. Nigeria has a total land area of $923,768km^2$, coastal water area of $140,000km^2$ and about $42,000km^2$ continental shelf areas, with an 853km coastline and a 200 nautical miles Exclusive Economic Zone (ECZ), in addition to a $13,000km^2$ of inland water bodies (FAO, 2007; Agbeja, 2010; Essien *et al*., 2018; Anyanwu *et al*., 2022). Furthermore, the country has a humongous population of about 206 million people in 2020, the largest in Africa, and the seventh largest in the world, after China, India, Unites States, Indonesia, Pakistan and Brazil (United Nations, 2022; Worldometer, 2023). This population presents both opportunities of blessing and curse. Blessing, because the country provides a ready and big market for the products of artisanal fishing, and curse, because the country is unable to meet the fish and food needs of its homologous population.

According to Nigeria's Minister of Agriculture and Rural Development, the country has an annual fish deficit of 2.5 million metric tonnes, given its annual consumption of 3.6 million metric tonnes, against its production of 1.123 million metric tonnes (Oritse, March 2021). As such, the country depends solely, on fish importation. The implications of this on the country's scarce foreign resource is enormous, considering the huge infrastructural, physical and human capital deficits of the country, which ought to have been funded with foreign exchange. This underscores the need for increasing artisanal fish production in the country, and policy makers and development experts are at cross-road, on how this could be achieved? However, the vital roles of farmers' wellbeing and socioeconomic conditions, particularly, gender, age and access to credit, play in agricultural production, have been widely acknowledged and documented (Akpo, 2003; Ekpo and Essien-Ibok, 2013; Ifeanyi-Obi and Iremesuk, 2018; Essien *et al*., 2018; Oti *et al*., 2020; George *et al*., 2021; Adewale *et al*., 2022).

Gender refers to socially construed norms, roles, behaviours, expressions and identities associated with the sex of an individual, i.e. being male or female, man or woman, boy or girl. It is used interchangeably with sex in the study, even though they are different. Sex refers to the classification of humans into male and female, as a result of biological, physiological and physical features, such as body-physique, chromosomes, gene expression, hormone levels and function, and reproductive/sexual anatomy (CIHR, 2020; WHO, 2023). Gender as a social construct varies from one society to another, and also changes from time to time within and across societies, while sex is constant irrespective of time and society. Gender influences how people perceive themselves and each other, how they act and interact, and the distribution of power and resources in society (CIHR, 2020). This contributes to the decision of whether to go into artisanal fishing or not, and if yes, how to go about it?

Similarly, age is of immense importance in artisanal fishing. It refers to "a period of human life, measured by years from birth, usually marked by a certain stage or degree of mental and physical development and involving legal responsibility and capacity" (Dictionary, 2023). Age comes with rights and responsibilities, expectations, skills and abilities, choices and decision makings, strengths and weaknesses, health and illness, risks and opportunities, and wealth and poverty, all of which greatly impact on artisanal fishing.

In like manner, credit is indispensable to the growth and development of artisanal fishing in Nigeria. According to Adewale *et al*. (2022), credit fast-tracks agricultural modernization, thereby enhancing farmers' contribution to development. It removes financial constraints, and give impetus to technology adoption in artisanal fish production. This enhances the production and productivity of the fish farmers. Credit involves the use of or possession of funds, products and/or services with a promise to pay back later, usually with interest. It is the extension of money from the lender to the borrower (Obilor, 2013), and a promise by one party to pay another for money borrowed or goods and services received. The ability to borrow funds, goods and services is referred to as access to credit. Access to credit is also defined with respect to amount of money, goods and services borrowed, and was used as such in the study.

Increasing artisanal fish production in Nigeria, would therefore require proper understanding of artisanal fish farmers' sex, age and access to credit facilities, and how these variables interact with each other. Such interactions were not investigated by previous studies on artisanal fishing and its socioeconomic characteristics (Akpo, 2003; Ekpo and Essien-Ibok, 2013; Ifeanyi-Obi and Iremesuk, 2018; Essien *et al*., 2018; George *et al*., 2021). Examining these interactions is very important, particularly, in Eastern Obolo, due to its rich water-resource endowments and wide reputation in artisanal fishing. This will contribute to increased evidenced-based policies in the fishery sub-sector. As a result, there would be increased self-sufficiency in fish production, nutrition and food security, and general improvement in the country's overall wellbeing. It is against these backdrops, that the study conducted a

socioeconomic profile of artisanal fishing in Eastern Obolo Local Government Area of Akwa Ibom State, Nigeria, from the perspective of sex, age and access to credit facilities.

2.0   Research 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^2 with about 184km shoreline length and the Obolo River. Eastern Obolo shares boundary with Mkpat Enin LGA in the north, Onna LGA in the north east, Atlantic Ocean in the south, Ibeno LGA in the south east and Ikot Abasi LGA in the west.
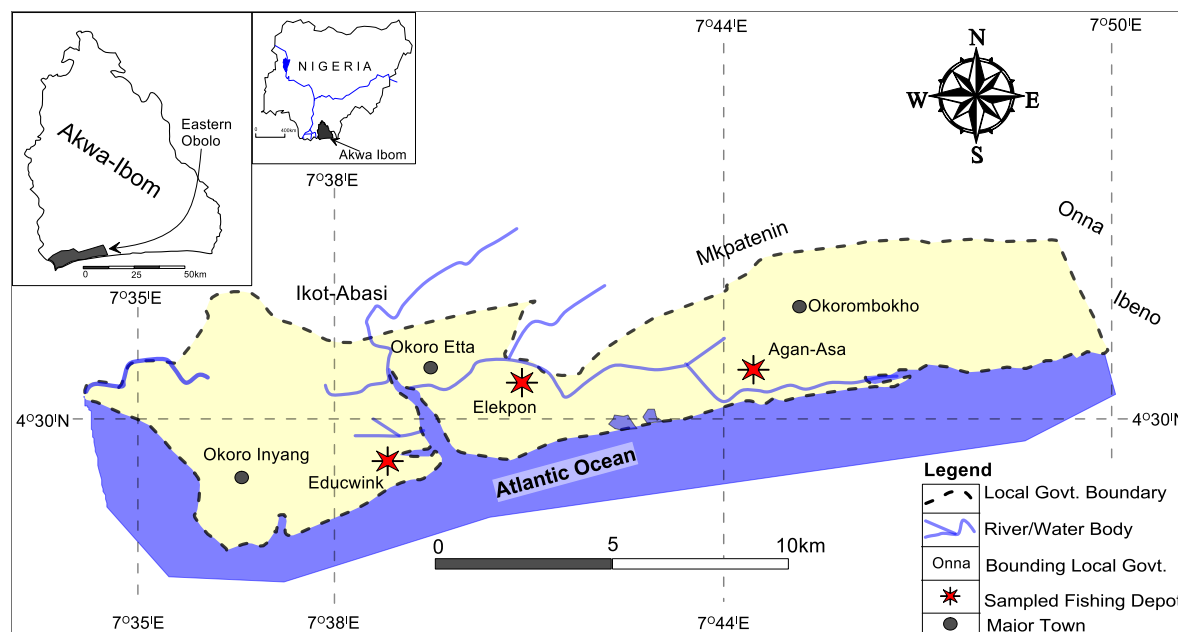

Figure 1: Map of Eastern Obolo LGA of Akwa Ibom State, Nigeria showing sampled fishing depots

The population of Eastern Obolo LGA is put at 169,202 inhabitants. The LGA has large forest reserves such as mangrove, 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 the 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 are 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 Mkpanak fishing depots. Also, a number of 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 and cross tabulation analysis, and chi-square and analysis of variance (ANOVA) techniques. The chi-square test is specified as follows:

$$\chi^2 = \frac{(O - E)^2}{E} \qquad (1)$$

Where:

χ^2 = Chi-square
O = observed frequency
E = expected frequency
The significant cells are the cells with the most extreme adjusted residuals (i.e. those with absolute values greater than 2), and they define the pattern of the association. The ANOVA model is specified in Equation 2.

$$F_{ratio} = \frac{MSA}{MSE} \qquad (2)$$

Where:
F_{ratio} = ANOVA test statistics
MSA = mean sum of squares due to factor A (variance between the sample means, i.e. explained variance)
Factor A = age and access to credit, respectively
MSE = mean sum of squares due to error (variance within the samples, i.e. unexplained variance)

3.0   Results and Discussion
Sex of the Respondents
The distribution of the artisanal fish farmers according to their sex is shown in Figure 2. The Table shows that all (100%) the fish farmers were males, implying that artisanal fish farming was an all-male affairs in the study.
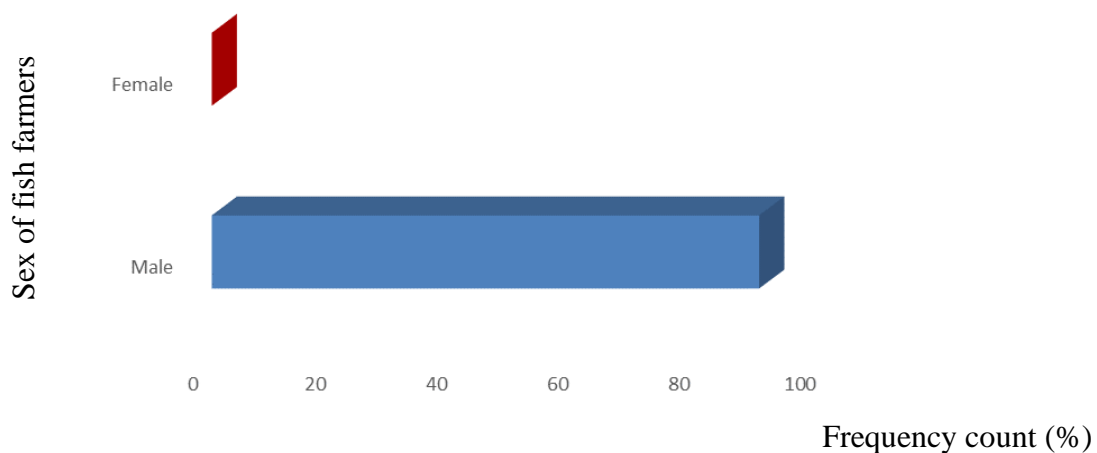

Figure 2: Frequency distribution of the respondents according to their sex
Source: Computed from field survey, 2021.

Artisanal fishing is a very taxing trade. It is also risky, and involves working at odd hours, especially, in the cold hours of the night and early hours of morning. While fishing, the farmers are exposed to the vagaries of weather, the uncertainties of the tides and waves of the oceans, rives, lakers, streams and their tributaries, and their basic sanitary and hygienic practices are best described as primitive. These are at variance with socially construed roles and expectations of the female gender including taking care of home and children, being always loved, protected, cared and provided for, evasion for risks, and meticulous attention to looks, appearances and hygiene, as well as feeding and sleeping habits. As such, these could have deterred the females from taking up the trade of artisanal fishing, and may therefore infer why fish farmers are generally referred to as fishermen. Besides, Akinwumi (2011) in Bonjoru *et al*. (2019) noted that restricted access to water resources, low technical know-how and lack of access to credit facilities inhibit females' involvement in artisanal fishing. The result is at variance with that of Bonjoru *et al*. (2019) which reported 11% female participation in artisanal fishing in Upper Benue River Basin, Nigeria, as well as Ifeanyi-Obi & Iremesuk (2018) in Eastern Obolo LGA where high proportion (42%) of female fish farmers were reported. Also, reasonable proportions of fisherwomen were reported in Onemolease & Oriakhi (2011) [9.2%], and Inoni & Oyaide (2007) [22.7%]. However, the study is in line with Aminu *et al.* (2017) which reported that all fish

farmers were males, in the lower Ogun River Basin Areas of Lagos State, Nigeria. Also, Thomas (2010), George *et al*. (2021) and Anyanwu *et al*. (2022) did not report sex distribution of their studies, probably because all the respondents were males.

Age of the Respondents
The results of the frequency distribution and analysis of variance (ANOVA) tests on the distribution of the fishermen according to their age and access to credit facilities are shown in Table 1.

Table 1: Frequency distribution and ANOVA test on ages of the fishermen

Age groups (years)	Frequency	Percentage (%)	Mean ($\bar{x}$)	F-value	Bonferroni-test
a. 25 – 34	57	63.33	29.39		b*; c*
b. 35 – 44	21	23.33	38.52		a*; c*
c. 45 – 54	12	13.34	48.42	375.184***	a*; b*
Total	90	100%	**34.06**		

Key: * - mean difference is significant at 0.05 level of probability; *** - significant at 0.001 levels of probability
Source: Computed from field survey, 2021.

The Table shows that the fishermen belonged to three age groups: 25 – 34 years, 35 – 44 years, and 45 – 54 years, and that their mean ages across the three groups were statistically significant ($p<0.0001$) from one another. On the whole, the average age of the fishermen was 34 years, and majority of them (63.33%) belonged to 25 – 34 years age group. These implies that artisanal fishing in Eastern Obolo LGA, Akwa Ibom State is largely undertaking be youthful population. This is a good development for the fishing trade that requires lots of energy, courage and risk-taking abilities. The result is similar to those of Aminu *et al.* (2017), Ifeanyi-Obi & Iremesuk (2018), and Bonjoru *et al*. (2019), but varies with Onemolease & Oriakhi (2011), George *et al*. (2021) and Anyanwu *et al*. (2022), which reported higher average ages for fishermen.
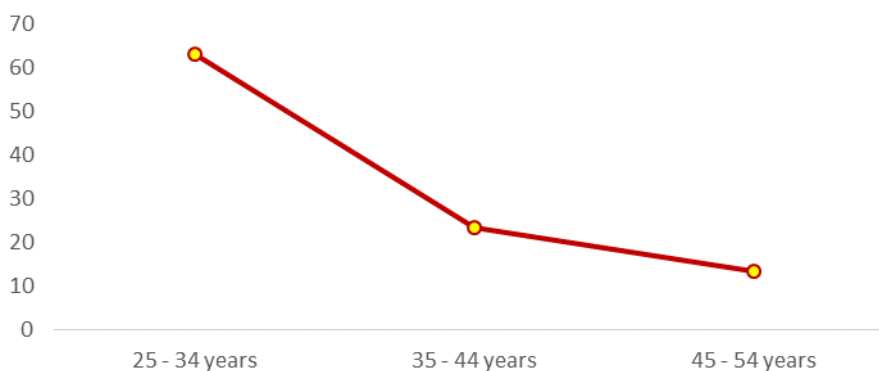

Figure 3: Frequency distribution of fishermen according to their age groups
Source: Computed from field survey, 2021.

Access to Credit Facilities of the Respondents
Table 2 shows the respondents' access to credit facilities. The result indicated that the average credit facility accessed by the fishermen was ~ ₦26,000. This is quite small, considering the low value of money in the country. In Nigeria, there is galloping inflation, high cost of petroleum motor spirit, and continuous loss in value of the naira against the dollar. As such, the tendency is high for the fishermen to divert small amounts of credit facilities into private consumption.

Table 2: Frequency distribution and ANOVA test on access to credit facilities by the fishermen

Access to credit (₦)	Frequency	Percentage (%)	Mean ($\bar{x}$)	F-value	Bonferroni-test
d. No access	49	54.4	0.00		e*; f*
e. 20, 000 – 40,000	23	25.6	37,608.70		d*; f*
f. 41,000 – 60,000	18	20.0	83,777.78		d*; e*
Total	90	100%	**26,366.67**	724.176***	

Key: * - mean difference is significant at 0.05 level of probability; *** - significant at 0.001 levels of probability
Source: Computed from field survey, 2021.

Further result indicated that there were disparities in the distribution of the fishermen across various classes of credit facilities (Figure 4).
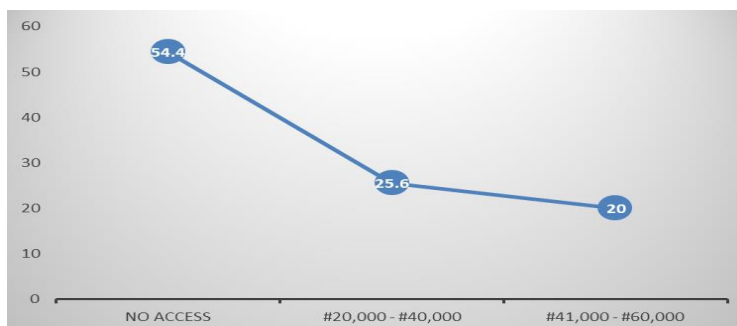

Figure 4: Frequency distribution of fishermen according to the various classes of credit facilities
Source: Computed from field survey, 2021.

Majority of them (54%) had no access to credit facilities, while the least proportion of them (20%) accessed between ₦40,000 and ₦61,000. Further to this, the average credit accessed by these fishermen across the various classes of credit were also statistically (P<0.0001) different from one another. Accessing credit facilities is a function of several factors including credit availability, willingness to access credit, and financial and social status. Certainly, the fishermen will not all be at the same standing, at the same time. Also, there is always a constraint of credit availability. These could have accounted for the disparities in their access to credit facilities. There is the need therefore, for increased financial inclusion for artisanal fish farmers, to enhance credit availability and accessibility to them. This could impact tremendously on artisanal production and productivity.

Interaction of Respondents' Age and Access to Credit Facility
The results of the interaction between the age and access to credit facility of the respondents are presented in Table 3.

Table 3: Crosstabulation of fishermen's access to credit and age

			Age groups (years)			
			25 - 34	35 - 44	45 - 54	Total
Access to Credit (₦)	No access	Frequency count	34	10	5	49
		% within age	59.6	47.6	41.7	54.4
		Adjusted residual	1.3	-0.7	-1.0	
	20,000 – 40,000	Frequency count	18	5	0	23
		% within age	31.6	23.8	0.0	25.6
		Adjusted residual	1.7	-0.2	12.2[S]	
	41,000 – 60,000	Frequency count	5	6	7	18
		% within age	8.8	28.6	58.3	20.0
		Adjusted residual	-3.5[S]	1.1	3.6[S]	
Chi-Square		17.905***				
Cramer's V		0.315				

Key: [S] – significant cells (ar > |2|)
*** - significant at 0.01 levels of probability
Source: Computed from field survey, 2021.

Table 3 shows three, but weak significant associations between access to credit facility and age. They include ₦20,000.00 – ₦40,000.00 and 45 – 54 years; ₦41,000.00 – ₦60,000.00 and 25 – 34 years; and ₦41,000.00 – ₦60,000.00 and 54 – 54 years. No fishermen within 45 – 54 years of age accessed the credit facility of ₦20,000.00 – ₦40,000.00. However, 8.8% and 58.3% of fishermen within the age groups of 25 – 34 years and 45 – 54 years, accessed ₦41,000.00 – ₦60,000.00, respectively (Figure 5).
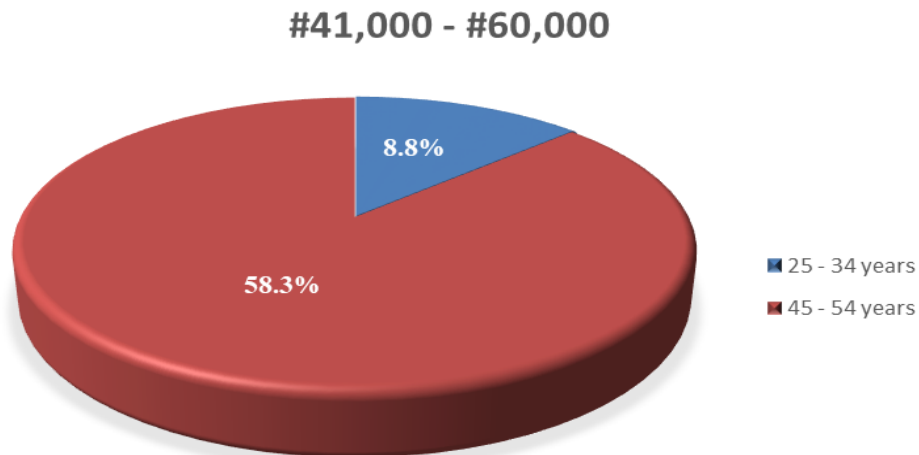

Figure 5: Frequency distribution (%) of the significant association between access to credit facilities and ages of fishermen
Source: Computed from field survey, 2021.

These imply that the significant association between age and access to credit facilities, is such that older fishermen access larger amounts of credit, while younger ones access smaller amounts of credit. The results are expected. Firstly, because, the range of the amounts of the credit facilities received by the fishermen were too small to use, for any meaningful investment in artisanal fishing. This is in view of the general high rates of inflation, high costs of energy such as Petroleum Motor Spirit, PMS (gasoline/petrol), Automotive Gas Oil, AGO (diesel) and Liquefied Petroleum Gas, LPG (cooking gas), Dual Purpose Kerosene, DPK (kerosene) and the Aviation Turbine Kerosene, ATK (JET-A1), as well as the serial depreciating value of naira (₦) to the dollar ($). All these have contributed in debasing the purchasing power of naira in the market. Secondly, also, older fishermen on average, may have been wealthier than the younger ones, and would as well have had larger families, with more responsibilities and expectations of life under the constraint of time. These could have made it very impulsive for majority of them to access the facilities.

Nonetheless, the later reasons could as well, be the albatross for majority of older fishermen accessing largest amounts of available credit, relative to younger ones. Younger persons are generally healthier, more active and energetic, industrious, risk-taking, open to changes in innovations and technology, and mostly, desirous to impact humanity. As such, increasing their access to largest amounts of available credit facilities, could greatly enhance the production levels and productivity of artisanal fishing in the country. This will snowball food production, and rural income and livelihood, thereby reducing the scourge of hunger, and food and nutrition insecurity, which are the hallmark of agricultural households.

Conclusion and Recommendations
The study conducted socioeconomic profiling of artisanal fishing in Eastern Obolo LGA of Akwa Ibom State, Nigeria. All the fish farmers were males, in their youthful age, with limited access to small amounts of credit facilities. There is significant association between age and access to credit facilities, to the extent that older fishermen access larger amounts of credit, and younger fishermen access smaller amounts of credit. The study recommends policies that will stimulate women's interest and participation in artisanal fishing, while ensuring the

fishing population remains youthful. Further policies should enhance increased credit accessibility to artisanal fishermen, such that larger amounts of credit can be accessed by younger fishermen.

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