Assessment of women involvement in artisanal fishery enterprises in Lagos State, Nigeria

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ABSTRACT

This study assessed women's involvements in fishery enterprises in Lagos State, Nigeria. Multistage sampling procedure was used to select 120 women fisher folks (WFFs) involved in fishery enterprises. Data collected using structured interview guide were subjected to descriptive and inferential analyses. Results on socioeconomics characteristics revealed that majority of the WFFs were >50 years, married and had primary education. Fish marketing (63.3%) and processing (82.5%) were the most dominant occupations of the WFFs. Also, women's involvement in fisheries activities was either high (40.0%) or moderate (45.8%). Limited access to improved fisheries technologies, low literacy of women, and lack of collateral for bank loans were the most severe constraints limiting WFFs. Chi-square analyses established that there were significant associations between WFFs' age group ($\chi^2 = 12.667$, $p \le 0.05$), level of education ($\chi^2 = 28.967$, $p \le 0.01$), area of specialization ($\chi^2 = 18.476$, $p \le 0.01$), fisheries experience ($\chi^2 = 14.931$, $p \le 0.01$) and their level of involvement in fisheries activities. It was concluded that WFFs' level of involvement was relatively high due to their active participation in fisheries activities. Therefore, WFFs roles in fisheries can be improved through education, financial empowerment and availability of fishing inputs.

Keywords: Artisanal fishery; fish processing; fish marketing; women involvement; women fisher folks

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Introduction

The fisheries sector of the Nigerian economy is made up of captured fisheries, aquaculture and importation. The captured fisheries involve harvesting naturally existing wild fish stocks by small scale/artisanal fishers and commercial/ industrial trawlers. Artisanal fisheries involve the use of small-scale canoes, which harvest fish from creeks, lagoons, inshore water and inland rivers. Earlier authors (Adedokun *et al.*, 2006; Anene *et al.*, 2010; Adewuni *et al.*, 2012) characterized artisanal fishery production by low capital outlay, low operational costs, low technology application and labor intensiveness. This fisheries sub-sector is of great relevance to the fishing communities as it serves as a source of livelihoods and food. Fish distribution networks in artisanal fish production is local

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market oriented: low revenue generation but with easy availability of fresh fish to rural communities along coastal and inland towns and cities.

Though still contributes the bulk of the domestic fish produced in the country, artisanal fisheries' contribution to total fish production in Nigeria has been declining thereby rapidly widening the gap between the demand and supply of fish, especially coupled with a continually growing population. This has resulted in various fisheries development projects such as the Fadama projects and Agricultural Transformation Agenda of 2020. Despite implementation of projects, the contribution of artisanal fisheries sector has not really improved because most of the projects focused on aquaculture development (Olaoye et al., 2016). Also, not much socio-economic impacts have been felt by the primary producers of fish; especially women. This is because men were the most included in the projects in which women have been active participants. According to Olufayo (2012), women have been reported to play a significant role in fishery activities all over the world especially in the coastal and riverine areas where these activities are broadly classified into fishing, processing and marketing. In Nigeria, women play a crucial role in fish production, processing, distribution and marketing and these roles have become relevant ways of improving food security, reducing poverty and sustaining livelihood. Nwabeze et al. (2013) observed that women in fishing communities participate actively in fisheries while also taking care of their families. Shalesha & Stanley (2000) reported that women perform important functions in the fisheries of most African and Asian countries.

The status of women in the society over the ages and many cultures had always been considered inferior to men. The historical deprivations of women socially, legally, politically and technologically aggravate their position and they are subordinated as a production unit for bearing and rearing children (Rahman & Alamu, 2003; Ibrahim et al., 2011). The vital role of women in the control of natural based resources such as fisheries in the rural communities has long been accepted but not recognized and valued as men (Obetta et al., 2007). Furthermore, economic extension and other public institutions are gender biased and often ignore the needs of women. Thus, the lack of access to and control over productive resources is the main factor limiting women participation in economic activities including fish processing thereby hampering the human development process (Acharya, 2003).

Women's contributions have become the subject of global consideration. They occupy strategic place in the production, processing, trade and use of the fishery resource. With the yearly increase of catch, post-harvest losses is on the increase due to inadequate and obsolete fish processing techniques within the fishing communities which are usually labor intensive, thereby reducing availability of fish to final consumers. Despite the obvious role played by women in ensuring that quality fish supplies reach the final consumers as well as ensuring food security at large, there has been little or no recognition of the role of women in the fisheries sector (Cliffe et al., 2011). Policies and programs are being formulated without giving due considerations to the role of women in the traditional fisheries. Therefore, there is need to promote women efforts in fishery business so as to boost production and supply of animal fish protein to the populace irrespective of age, gender or class. This paper therefore, assessed women involvement in fishery enterprises in Lagos State, Nigeria by considering the following specific objectives:

i. Describe the socio-economic characteristics of women fisher folks (WFFs);

- Assess the fishery characteristics of the WFFs;
- iii. Identify the roles played by WFFs in artisanal fishery activities;
- iv. Determine the level of women's involvement in artisanal fisheries; and
- v. Ascertain the constraints faced by WFFs.

Materials and Methods

This study was conducted in Lagos State. The demographics of the area include Yoruba speaking natives although there were a lot of people from different parts of the country and the globe living, working and doing business in the area.



Fig. 1: Map showing the fishing communities of the study areas; Source: Savana-Style-Simple-Map-of-Lagos cited by Lawal *et al.*, (2016)

Sampling procedures and sampling sizes

The sampled population consists mainly of women fisher folks in Lagos State. A multistage sampling procedure was adopted to select respondents for this study. Stage one involved purposive selection of two out of the twenty Local Government Areas (LGAs) based on high fishing, and pre- and post- harvest fisheries related activities such as the observation of women involvement in fisheries activities. The selected LGAs were Epe and Ibeju-Lekki. This was followed by the purposive selection of five fishing communities from each of the LGAs due to high fishing activities. The final stage entailed random sampling of fifty percent (50%) of sampling frame of artisanal women fisher folks within the selected communities to give a total of 120 women fisher folks which served as the sample size for this study as detailed in Table 1. The sampling frames were compiled by the research team with help of extension personnel from Lagos State Agricultural Development Authority (LASADA).

Local govern- ment areas	Fishing communities	Sampling frame	Sample size (50% of sampling frame)
Ере	Ebute Afuye	10	5
•	Ebute Otta	20	10
	Ikosi	28	14
	Imope	12	6
	Orugbo	24	12
	Total	94	47
Ibeju Lekki	Sirinwon	32	16
5	Ebute Lekki	12	6
	Idata	22	11
	Ise	26	13
	Igbolomi	33	17
	Total	145	73
Total	10 fishing commu- nities	239	120

 TABLE 1

 Sampling frame and sample size determination

Data collection and analysis

Information were gathered with copies of a semi-structured interview guide. The interview guide was pretested on women fisher folks in communities not included in the final data collection to ensure both the validity and reliability of the interview guide. The respondents were informed of the purpose of the research and interview guide was interpreted to the respondents in their native language. The interview guide was used to elicit information on the socio-economic characteristics of women fisher folks, fishery related characteristics of the respondents, roles of women fisher folks in artisanal fishing enterprise, and constraints facing women involvement in fishery enterprise.

Measurement of key variables

1) Extent of women involvement in fishery enterprise: this was measured at ordinal level using a 9-item scale with three response options; 'Always', 'Sometimes' and 'Never', assigned scores of 2, 1 and 0, respectively. Mean values were computed for each of the items. The mean values were used to rank the items. For each respondent, the minimum and maximum scores obtainable were 0 and 18 respectively. Based on the scores, the respondents were categorized into those with high level of involvement (13 - 18), moderate level of involvement (7 - 12), and low level of involvement (0 - 6).

2) Constraints facing fishery enterprise: This was measured at ordinal level using a 10-item scale with three response options – 'Very severe', 'Severe' and 'Not severe', assigned scores of 3, 2 and 1, respectively. Mean values were computed for each of the items. Mean values were computed for each of the items and used to rank the constraint items according to their level of severity.

Data analysis

Data were subjected to both descriptive (frequency counts, percentage, mean, and standard deviation) and inferential statistics (Chi-square analytical technique).

Results and Discussion

characteristics Demographic of artisanal women fisher folks is presented in Table 2. It reveals that 63.3 percent of the respondents were older than 50 years while 35.8 percent were within 36 and 50 years. Although more of the respondents could be described as old, the findings indicated that both the middleaged and old women were active participants in the artisanal fishery industry. This agrees with Olaoye et al. (2019) who asserted that women fish merchants were ageing, although still within the economic active work force of the population. This further implies that most of the women fisher folks were old and may not be actively productive in the nearest future. According to Olapade & Sesay (2018), this is because fishery activities are not for older folks due to the fact that it is energy sapping. This has negative implications on sustainable supply of fish if younger women are not encouraged to participate in artisanal fishery enterprises. This result, however, contradicts previous findings (Anyim et al., 2021; Akinrotimi et al., 2011) who in their different studies observed high participation of young women within the age bracket of 20 - 40 years while Cliffe & Akinrotimi, (2013) reported a decreasing trend of 5.0% - 10.0% as the age of the women advanced.

It further shows that the highest proportion (55.0%) of the respondents were practiced Christians, while 28.3% and 16.7% practiced Islam and traditional religions, respectively. This implies that artisanal fishery enterprises were ventured in by everyone irrespective of religious affiliations probably because there are limited religious taboos on the consumption and production of fish. Also, about half (52.5%) of the respondents were married, and others were widowed (16.7%), divorced (18.3%) and single (11.7%). This could then be the reason for their activeness in fisheries activities as they need to fend for the family members in their care. The involvement of married women in fisheries activities could be linked to the likelihood of their husbands being fishermen who require their (women's) assistance in order to meet the family needs. This aligns with the view of Anyim et al. (2021) who explains that married women's involvement in processing and marketing of fish was to render assistance to their husbands in order to enhance their livelihoods.

Educational status

Table 2 also reveals that 58.3% and 12.5% of the women fisher folks had primary and adult education respectively, while 17.5% had no formal education. This means that the women fisher folks had low literacy level which could have negative impact on sustainable fisheries development in the adoption of new fisheries technology. The apathy towards women as equal partners in development is a probable reason for the higher level of illiteracy among women fisher folks (Cliffe & Akinrotimi, 2015). Other empirical studies (Olaoye et al., 2019; Cliffe & Akinrotimi, 2015), also reported low level of educational attainment among women involved in postharvest fish handling activities. Their level of education could further explain why they relied on the fisheries and other natural resource-based activities for their livelihoods as they are not likely to get better jobs. The dominance of women with low level of education in postharvest fisheries activities has been attributed to the belief that educated persons might consider fish processing and other handling practices as

traditional and menial (Obasohan *et al.*, 2012), and that educated persons rarely live in rural areas (Akinpelu *et al.*, 2013; Anyim *et al.*, 2021). In buttressing these notions, Adeyeye *et al.* (2005) stated that education is directly related to employment and income.

Household size

More than half (55.0%) of the respondents had household sizes of 1 - 5 persons while 45.0 percent were from households with 6 -10 persons. This is an indication that women involved in fisheries activities had relatively small household size which may negatively affect their level of involvement in fisheries activities. This is in consonance with Anyim et al. (2021) who opined that women processors with large household size are more likely to engage in fish processing and packaging than those from households with fewer people. Majority (82.5%) of the women fisher folks were into fish processing. Other occupations of most of the women fisher folks were fish marketing (63.3%), fishing (30.0%), and petty trading (35.8%). This implies that the women fisher folks had varied levels of livelihood apart from fisheries activities as some only relied on either fish processing or marketing, while others combined these livelihood activities.

Omitoyin & Fregene (2012) reported that fisher folks had diversified income sources. The result further indicated that the respondents were more into the processing and marketing of fish when compared to other livelihood activities. It also implies that some women were into active fishing as an occupation. This is in tandem with Ologbon *et al.* (2014) who observed that fishing and natural resources collection was the primary occupation of both men and women of more than two-thirds of riverine households in Southwestern Nigeria. However, this contradicts previous belief that restricted women activities in the fishery industry to processing and marketing as fishing are believed to be within the exclusive domain of male. It therefore supports previous studies which reported the immense roles played by women in artisanal fisheries development. For instance, FAO (2012) estimated that not less than 30% of the people employed in fisheries (harvest and post-harvest) were women. Rajagopalan (2012) explains that women play significant roles in the processing and preservation of fisheries products.

TABLE 2Demographic characteristics of respondents (n = 120)

Socio-economic charac- teristics	Frequency	Percentage
Age (years) 26 – 35	1	0.8
20 - 53 36 - 50	43	35.8
>50 = 50	43 76	53.8 63.3
	/0	03.3
Religion	24	28.2
Islam	34	28.3
Christianity	66	55.0
Traditional	20	16.7
Marital Status		
Single	14	11.7
Married	63	52.5
Divorced	22	18.3
Widowed	20	16.7
Educational Status		
No Formal Education	21	17.5
Primary Education	70	58.3
Adult Education	15	12.5
Secondary Education	11	9.2
Tertiary Education	3	2.5
Household Size		
1-5	66	55.0
6-10	54	45.0
Occupations		
Fish processing	99	82.5
Fish marketing	76	63.3
Fishing	36	30.0
Fish merchants	21	17.5
Petty trading	21 43	17.5 35.8
Artisans (e.g. fashion	43 5	35.8 4.2
designing)	5	7.4

Source: Field Survey (2019)

Fishing characteristics of respondents

Fishing characteristics and practices of women fisher folks are presented in Table 3. The result reveals that 24.2%, 52.5% and 27.5% of the respondents were members of fisheries cooperative associations, had contact with extension agents, and had access to credit facilities respectively. The meaning of these results were that majority of the women fisher folks were non-members of associations and had no access to credit facilities while just about half had contact with extension agents. This then implied that extension service delivery needs to be improved within the study in other to reach out to most of the women fisher folks. This could be due to some beliefs that men are the main actors of the fisheries sector while regarding women as mere helps to the male folks. Lack of access to credit among the women fisher folks could be directly linked to their low collateral which hindered women from accessing funds from formalized sources. Authors Babalola et al. (2015) and Olaoye et al. (2012) also attributed lack of access to credits to the fact that the fisheries sector has been generally considered as a very high risk enterprises by most financial institutions in Nigeria.

Just like any other business, common modes of entry into fisheries-related enterprises include inheritance from parents or guardians, formal training from academic institutions or seminars/workshops organized by extension agencies, and apprenticeship – a situation where a person learns a trade through the onthe-job training over an agreed period of time usually in years. Furthermore, Table 3 reveals that 32.5% and 57.5% of the women fisher folks got into the fishery business through inheritance and training respectively while apprenticeship was the mode of entry into the fishery business by 10.0% of the women fisher folks. This indicates that although some people inherited fisheries trade from older generations, fisheries enterprises can be learned either through trainings from schools or the informal

apprenticeship. This probably explains why some women take more active roles in almost all the fisheries-related enterprises including fishing. Findings presented in Table 3 reveals that the highest proportion (55.8%) of the women fisher folks specialized in fish processing, while 27.5% and 16.7% specialized in fish marketing and fishing respectively. This implies that fish processing was the primary occupation of most of the women fisher folks in the study area. It was shown that 84.2% of the respondents had more than 10 years of experience in fishery businesses. This implies that majority of the women fisher folks had tangible years of experience in the business probably because artisanal fishery enterprises have proven to be profitable ventures.

TABLE 3Distribution of women fisher folks byfishery practices (n = 120)

Jishery pructices $(n - 120)$				
Fishery practices	Frequency	Percentage		
Membership of asso-				
ciations	31	25.8		
Members	89	74.2		
Non members				
Contact with extension	1			
agent	63	52.5		
Had contact	57	47.5		
Had no contact				
Access to credit				
facilities	33	27.5		
Had access	87	72.5		
Had no access				
Mode of entry into				
fishery business				
Inherited	39	32.5		
Trained	69	57.5		
Apprenticeship	12	10.0		

Area of specializa	ition	
Fishing	20	16.7
Processing	67	55.8
Marketing	33	27.5
Fishery business experience (years)	
1 - 5	4	3.3
6 - 10	15	12.5
>10	101	84.2

Source: Field Survey (2019)

Roles of women fisher folks in artisanal fishing enterprise

The extent to which women fisher folks were involved in the different fisheries activities was presented in Table 4. It shows that the highest proportions of the respondents were always involved in the sales of fishing gears (54.2%), canoe hiring services (46.7%), processing and preservation of fish (55.8%), unloading of fish from canoes (64.2%), sales of smoked fish (65.8%) and marketing of fresh fish (37.5%). The mean values for sales of smoked fish, sales of fishing gears, unloading of fishes from canoes, processing and fish preservation, hiring of canoes and marketing of fresh fish were higher than 1.00 while production and sales of fishing mats, fish merchants, active fishing and mending of fishing gears had mean values lesser than 1.00. This suggested that women fisher folks' contribution to fisheries development were very high with respect to fish production by reducing post-harvest losses. It could then be deduced that the roles played by women fisher folks resulted in both social and economic benefits which are pointers to the sustainable supply of safe fish to the consumers. The finding from this study is similar to that of Udong et al. (2010) who stated that women act as marketing agents by selling fish to wholesalers and processors.

TABLE 4

Roles Always Occasionally Never Mean (X) Production and sales of fishing mats for fish 50 (41.7) 18 (15.0) 52 (43.3) 0.98 drying Fish merchant "mammy" 18 (15.0) 3 (2.5) 99 (82.5) 0.33 Marketing of fresh fish 45 (37.5) 32 (26.7) 43 (35.8) 1.02 Sales of smoked fish 79 (65.8) 41 (34.2) 0 (0.0) 1.66 Unloading of fishes from canoes 77 (64.2) 31 (25.8) 12 (10.0) 1.54 Active fishing of aquatic food resources 20 (16.7) 16 (13.3) 84 (70.0) 0.47 Processing and fish preservation 67 (55.8) 32 (26.7) 21 (17.5) 1.38 Canoe hiring service 56 (46.7) 31 (25.8) 33 (27.5) 1.19 Mending of fishing gear 48 (40.0) 22 (18.3) 50 (41.2) 0.98 Sales of fishing gears 1.43 65 (54.2) 41 (34.2) 14 (11.7)

Distribution of women fisher folks by extent of involvement in different fisheries activities (n = 120)

Source: Field Survey, 2019

Figure 1 shows that the highest proportion (45.8%) of the women fisher folks were moderately involved in fisheries activities. This was followed by 40.0 percent of the respondents who were involved in fisheries activities at high level while only 14.2 percent of the women who involved at low level. This indicated that the women fisher folks were involved in fisheries activities at either high or moderate level. The low level of involvement in fisheries activities by some women fisher folks, according to De & Pandey (2014), is because women involvement in economic activities is determined by their husbands. Though, Olaoye et al. (2019) reported that women fish merchants played active roles in the development of artisanal fisheries industry by acting as processors and marketers of fish catch as well as suppliers of fishing gears.

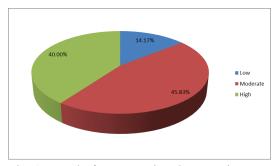


Fig. 1: Level of women's involvement in fisheries activities

Constraints facing women involvement in fisheries enterprises

Results in Table 5 show that majority of the women fisher folks identified inadequacy of women extension workers (95.0%), high cost of constructing fishing gears (95.0%), lack of access to credit and finance (82.5%), lack of collateral to obtain bank loans (100.0%), low literacy (98.3%) and limited access to

improved fisheries technologies (100.0%) as either very or mildly severe constraints to their involvement in fisheries enterprises. On the other hand, the highest proportion of the respondents considered lack of contact with fisheries extension personnel (55.0%), lack of access to fisheries facilities (60.0%) and male dominant society (41.7%) as not severe constraints to their involvement in fisheries activities. Limited access to improved fisheries technology and lack of contact with fisheries extension personnel with mean values of 2.92 and 1.51 respectively were the most severe and least severe constraints to women involvement in fisheries.

The findings from the study indicated that almost all the items in Table 5 were considered as severe constraints to women involvement in fisheries enterprises except lack of contact with extension personnel, traditional beliefs hindering women involvement in fisheries and male dominant society with 5.8%, 10.8% and 23.3%, respectively. The findings are in agreement with previous studies on limiting factors to women involvement in artisanal fisheries. For instance, Cliffe & Akinrotimi (2015) reported lack of credit facilities as one of the severe constraints to women involvement in fishery activities in coastal communities of Rivers State. Olaoye et al. (2019) also reported the constraints facing women fish merchants in artisanal fishery to include high cost of fishing equipment and distance to financial institutions. In the same vein, Bolarinwa (2017) itemized low participation of women in decision making due to gender inequality, lack of basic education, restricted access to credit, inadequate dissemination of information through extension services/change agents, and dearth of social and infrastructural facilities as constraints faced by women in fisheries.

Constraint faced by WFFs	Very Severe	Mildly Severe	Not Severe	Mean	Rank
Lack of contact with fisheries extension personnel	7 (5.8)	47 (39.2)	66 (55.0)	1.51	10 th
Male dominant society	28 (23.3)	42 (35.0)	50 (41.7)	1.82	8^{th}
Traditional beliefs hindering women involvement in fisheries activities	13 (10.8)	105 (87.5)	2 (1.7)	2.09	7^{th}
Inadequacy of women extension workers	33 (27.5)	81 (67.5)	6 (5.0)	2.23	6^{th}
High cost of constructing fishing gears	64 (53.3)	50 (41.7)	6 (5.0)	2.48	4^{th}
Lack of access to fisheries facilities	47 (39.2)	1 (0.8)	72 (60.0)	1.79	9^{th}
Lack of access to credit and finance	62 (51.7)	37 (30.8)	21 (17.5)	2.34	5^{th}
Lack of collateral to obtain bank loans	79 (65.8)	41 (34.2)	0 (0.0)	2.66	$3^{\rm rd}$
Low literacy	106 (88.3)	12 (10.0)	2 (1.7)	2.87	2^{nd}
Limited access to improved fisheries technologies	110 (91.7)	10 (8.3)	0 (0.0)	2.92	1^{st}

TABLE 5Distribution of women fisher folks by constraint facing fishery enterprises (n = 120)

Source: Field survey, 2019

Association between socio-economic characteristics and women fisher folks' level of involvement

Results of associations between respondents' socio-economic characteristics and their level of involvement in fisheries activities are presented in Table 6. It reveals that there were significant associations between women fisher folks' age group ($\chi^2 = 12.667, p \leq$ 0.05); level of education ($\chi^2 = 28.967, p \leq$ 0.01); area of specialization ($\chi^2 = 18.476, p \leq$ 0.01); household size ($\chi^2 = 12.717, p \le 0.01$); extension contact ($\chi^2 = 8.950$, $p \le 0.05$); mode of entry ($\chi^2 = 12.361$, $p \le 0.05$); fisheries experience ($\chi^2 = 14.931$, $p \le 0.01$); and their level of involvement in fisheries activities. These results are in tandem with the findings of Anyim *et al.* (2021) who established that women processors' age, level of education, and household size were among the significant predictors of their participation in fish processing and marketing. The significance of age could be attributed to the accumulated knowledge and years of experience of the women fisher folks as older women are more likely to participate in fisheries activities than the younger folks. Based on the position of Adeyeye *et al.* (2005) that education is directly linked to employment and income, educated persons may be reluctant to actively participate in artisanal fisheries activities.

Variables	Chi-Square	df	p-values	
Age	12.667	4	0.017*	
Marital Status	5.714	6	0.302	
Religion	8.250	4	0.141	
Educational level	28.967	8	0.003**	
Area of specialization	18.476	4	0.005**	
Household size	12.717	2	0.001**	
Membership of associations	1.650	2	0.418	
Extension contact	8.950	2	0.025*	
Access to credit and finance	1.252	2	0.461	
Mode of entry	12.361	4	0.034*	
Fisheries experience	14.931	4	0.009**	

TABLE 6 Chi-square results on associations between socio-economic characteristics and women fisher folks' level of involvement in fisheries activities

* and ** indicate significant associations at 0.05 and 0.01 levels of significance respectively; df = degree of freedom

Conclusion and Recommendation

The contribution and role of women fisher folks to artisanal fisheries development cannot be over-emphasized as a result of their relatively high level of involvement. They act as the major marketers of both fresh and smoked fish, sellers of fishing gears, labour for unloading of fish, canoe hiring service operators, and processors of the fish. Despite the contribution of women, their involvement is largely constrained by myriads of constraints such as cultural belief, lack of quality education and credit facilities.

Based on the research findings, the study therefore recommends that fisheries research institutes, in collaboration with government and non-governmental organisations, develop and introduce improved fishing technologies which should be disseminated by fisheries extension agencies; so as to overcome the challenges of high cost of constructing fishing gears and crafts. Availability and accessibility of loans and credit facilities should be made available to both male and female gender with single digit interest rate with minimal or no collateral. Adult literacy is another issue that needed to be promoted in fishing communities especially among women fisher folks with low level of education.

In order to increase the ratio of women extension workers to women fisher folks, the recruitment of more qualified female extension personnel is also suggested. There is also the urgent need to get rid of traditional beliefs and customs restricting women involvement in artisanal fisheries, through sensitization programmes and implementation of appropriate legislations promoting equitable access to productive resources. Finally, women fisher folks are encouraged to be more involved in fisheries activities toward making fish available and accessible to its consumers on a sustainable basis.

REFERENCES

- Acharya, M. (2003) Efforts at promotion of women in Nepal Kathmandu, Tanka Prasad Acharya Foundation in Africa. Pp. 46–52.
- Adedokun, O.A., Adereti, F.O. & Opele, A.I. (2006) Factors influencing the adoption of fisheries innovations by artisanal fishermen in coastal areas of Ogun State, Nigeria. *Journal of Applied Science Research*, 2(11), 966–971.
- Adewumi, M.O., Ayinde, O.E., Adenuga, A.U. & Zacchaeus, S.I. (2012) The profitability analysis of artisanal fishing in Asa River of Kwara State, Nigeria. *International Journal of De*velopment and Sustainability, 1(3), 932–938.
- Adeyeye, S.A.O., Oyewole, O.B., Obadina, A.O., Omemu, A.M., Oyedele, H.A. & Adeogun, S.O. (2005) A survey on traditional fish smoking in Lagos State, Nigeria. *African Journal of Food Science*, 9(2), 59–64.
- Akinpelu, O.M., Ayeloja, A.A., George, F.O.A., Adebisi, G.L. & Jimoh, W.A. (2013) Gender analysis of processing activities among commercial catfish processors within Ibadan metropolis, Oyo State, Southwestern Nigeria. *Journal of Aquaculture Research and Devel*opment, 4(3), 1–5.
- Akinrotimi, O.A., Cliffe, P.T. & Ibemere, I.F. (2011) Integration of rural aquaculture in small scale farming in Niger-Delta region of Nigeria. *Global Approaches to Extension Practice: A Journal of Agricultural Extension*, 7(1), 43–48.
- Anene, A., Ezeh, C.I. & Oputa, C.O. (2010) Resources use and efficiency of artisanal fishing in Oguta, Imo State, Nigeria. *Report and Opinion*, 2(7), 10–16.
- Anyim, C.O., Odoemelam, L.E. & Okorie, N.U. (2021) Women participation in fish processing and packaging in rural communities of Delta State, Nigeria. Journal of Agricultural Extension and Rural Development, 13(1), 34–43.

- Babalola, D.A., Bajimi, O. & Isitor, S.U. (2015) Economic potentials of fish marketing and women empowerment in Nigeria: Evidence from Ogun State. African Journal of Food, Agriculture, Nutrition and Development, 15(2), 9922–9934.
- Bolarinwa, J.B. (2017) Involvement of women in sustainable aquaculture development of Nigeria. *Agricultural Research and Technology: Open Access Journal*, 5(1), 001–003.
- Cliffe, P.T. & Akinrotimi, O.A. (2013) The role of women in fishery activities in some coastal communities of Rivers State, Nigeria. Proceedings of 28th FISON Annual conference, Nov. 25–30, 2013.
- Cliffe, P., Akinrotirni, O.A. & Ibemere, I. F. (2011) The role of fish in improving child nutrition in Nigeria. *Journal of Technology and Education in Nigeria*, 16(7), 20–30.
- Cliffe, P.T. & Akinrotimi, O.A. (2015) Role of women in fishery activities in some coastal communities of Rivers State, Nigeria. *International Journal of Agricultural Research*, 10, 24–32.
- De, H.K. & Pandey, D.K. (2014) Constraints to women's involvement in small scale aquaculture: An exploratory study. *International Journal* of Agricultural Extension, 2(1), 81–88.
- FAO (2012) The State of World Fisheries and Aquaculture 2012. Food and Agriculture Organization (FAO); Rome, Italy. Pp. 209–213.
- Ibrahim, H.I., Kigbu, A.A. & Mohammed, R. (2011) Women's experience in small scale fish processing in Lake Feferuwa fishing community, Nasarawa State. *Livestock Research for Rural Development*, 23(3), 1–8.
- Lawal, J., Obatola, P., Giwa, E.J. & Alhaji, T.A. (2016) Socio-economic analysis of artisanal fishing operation in West and East Axes of Lagos State, Nigeria. World Journal of Agricultural Research, 4(1), 31–35.

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- Nwabeze, G.O., Ifejika, P.I., Tafida, A.A., Ayanda, J.O., Eric, A.P. & Behonwo, N.E. (2013) Gender and fisheries of Lake Kainji, Nigeria. A Review Journal of Fisheries and Aquatic Science, 8(11), 9–13.
- Obasohan, E., Emmanuel, O., Edward, E. & Oronsaye, J.A.O. (2012) A survey on the processing and distribution of smoked catfishes (*Heterobranchus and Clarias spp.*) in Ekpoma, Edo State, Nigeria. *Research Journal of Recent Sciences* 1(8), 23–28.
- Obetta, N.C., Ifejiaka, P.T. & Nwabeze, G.O. (2007) Assessment of fishery content in agricultural activities of the rural women in Kukuwa LGA of Bomo State. Proceedings, FISON Annual Conference, Nov. 29, 2004; Ilorin, Nigeria. Pp. 148–152.
- Olaoye, O. J., Ezeri, G. N. O., Akegbejo-samsons, Y., Awotunde, J. M. and Ojebiyi, W. G. (2016). Dynamics of the adoption of improved aquaculture technologies among fish farmers in Lagos State, Nigeria. *Croatian Journal of Fisheries*, 74: 56-70.
- Olaoye, O.J., Idowu, A.A., Omoyinmi, G.A.K., Akintayo, I.A., Odebiyi, O.C. & Fasina, A.O. (2012) Socio-economic analysis of artisanal fisher folks in Ogun waterside local government area of Ogun State, Nigeria. Global Journal of Science Frontier Research Agriculture and Biology, 12(4), 123–135.
- Olaoye, O.J., Ojebiyi, W.G., Olalekan, T.O., Abdulsalami, S.A. & Opele, I.A. (2019) Contribution of women fish merchants in artisanal fisheries development in Ogun Waterside Local Government Area, Ogun State. Nigerian Journal of Fisheries, 16(2), 1729–1736.
- Olapade, O.A. & Sesay, O.R. (2018) Consumer behaviour towards fish consumption and fish sustainability in Ogun State, Nigeria. *International Journal of food and Agricultural Research*, 7(1), 149–157.

- Ologbon, O.A.C., Idowu, A.O., Salmonu, K.K. & Oluwatayo, I.B. (2014) Incidence of multidimensional poverty among riverine households in Southwestern Nigeria. *Journal of Agricultural Science*, 6(5), 167–179.
- **Olufayo, M.O. (2012)** The gender roles of women in aquaculture and food security in Nigeria. IIFET 2012 Tanzania Proceedings. Pp. 1–7.
- Omitoyin, S.A. & Fregene, B.T. (2012) Potential impacts of climate change on livelihood and food security of artisanal fisher folks in Lagos State, Nigeria. *Journal of Agricultural Science*, 4(9), 20–30.
- Rahman, S.A. & Alamu, J.F. (2003) Estimating the level of women's interest in agriculture: The application of logic regression model. *Nigeria Journal of Scientific Research*, 4, 45–49.
- Rajagopalan, R. (2012) An evaluation of the roles of women in fishing communities of Dakar, the Lapetite Cote and Saloum. In: N. Biswas (Ed.). Yemaya (ICSF's Newsletter on Gender and Fisheries), 40: 11.
- Shalesha, A. & Stanley, V.A. (2000) Involvement of rural women in Agriculture. An innovation approach Naga. The ICARM Quarterly, 23(3), 13–17.
- Udong, E., Tilburg, A.V. & Niehof, A. (2010) Entrepreneurial women and institutions in Ibaka fishing community, Akwa Ibom State, Nigeria. Paper presented at the 2010 Annual Conference of the International Association for Feminist Economists (IAFFE) held at Facultad de Ciencias Economicas, Universidad de Buenos Aires, Argentina between Thursday, July 22 and Saturday, July 24, 2010.