

GENDER ANALYSIS OF WHOLESALE SMOKED-FISH MARKETING IN KAINJI LAKE BASIN, NIGERIA

*¹Omeje J.E., ²Achike A.I., ²Arene C.J., ¹Ifejika P.I. and ¹Bankole S.P.

¹Division of Socio-Economics & Extension Services,

National Institute for Freshwater Fisheries Research, New Bussa

²Department of Agricultural Economics, University of Nigeria, Nsukka

*Corresponding author's email: juliusomeje@gmail.com

ABSTRACT

The study investigated gender in wholesale smoked-fish marketing in Kanji Lake Basin, Nigeria. Specifically, the study identified roles of individual actors in fish marketing, determined the profitability of fish marketing, analyzed the marketing efficiencies and estimated gaps in the fish marketing chain. A two-stage sampling procedure was used to select 60 wholesale smoked-fish marketers from 13 communities. Primary data were collected from wholesale smoke-fish marketers using an interview schedule. Data were analyzed using percentages, net profit margin and efficiency models. The result showed that the youths perform about 60% of task in activities such as sorting and grading, fish arrangement in cartons, loading and offloading and transportation to market centers. Wholesale fish marketing was profitable with a 4.45% return on investment (ROI) for the men, 3.76% ROI for the women and 2.88% ROI for the youths while Shepherd's marketing efficiency was 24.84 for the men, 25.65 and 26.65 for the women and youths respectively. Also, there were no glaring gender gaps in value of fixed assets, revenue, gender-based employees and wage for the men, women and youths involved in the business. Therefore, it is recommended that capacity building which targets women and youths should be adopted and implemented by government and other relevant agencies in order to enable them compete equally with men in wholesale smoked-fish marketing.

Key words: gender, smoked-fish, marketing, Kainji Lake Basin

INTRODUCTION

Gender is defined as the roles, responsibilities, personality traits and attributes of males and females as stipulated within the context of a given society (Siles *et al.*, 2019). Gender issues are critical regarding to equality and equity for inclusive growth; thus, attracting attention from private and public sectors and sometimes, societal considerations. Over the past few decades, gender issues have gained attention from new networks and institutions, sometimes informal, as well as individuals within networks and institutions who have led efforts towards achieving greater gender equality (Williams, 2016). This is because overtime, the privileges accorded to either men, women or youths have greatly impacted the economic, political and societal benefits in different ways.

From an economic perspective, men, women and youths have been playing crucial roles in value chain activities. For example, men and women play differential roles in the fisheries value chain with, women traditionally engaged in fish marketing (Sornkliang *et al.*, 2018; Ike-Obasi and Ogubunka, 2019). Marketing is an important aspect of agriculture which entails the production of goods and services. Production is completed when the commodity produced reaches the final consumer

through marketing (Adedeji *et al.*, 2019). In fish marketing, fish passes through various market channels and exchange points before they reach the final consumers (Madaki *et al.*, 2019). These market intermediaries are the whole-sellers who assemble fish in bulk and distribute to retailers for resale in smaller units. The market intermediaries comprise of men, women and youths who play important roles in the marketing chain, by making fish available to consumers at the right time, form, and place and at the least possible cost through an effective and efficient marketing system (Girei *et al.*, 2021).

In Nigeria, fish marketing is mostly controlled by the private sectors in various market channels such as; farm gates, village markets, assembly centers, retail markets and urban markets. Fish pass through these channels and exchange points before they reach the final consumers. At every stage in the marketing chain, fish must be packed and unpacked, loaded and un-loaded to meet consumer demand; thereby creating economic activity for the agents involved (Madaki *et al.*, 2019).

The impact of fish marketing in Kainji Lake Basin Nigeria is enormous as a reliable source of livelihood through employment, income, and wealth creation for men, women and youths. Previous studies on artisanal fish marketing with well documented

evidences of these in the lake basin by Alamu and Mdaihli (1994), Anthonio (1995) and Ifejika *et al.* (2009) who identified the participation of women in artisanal fisheries with little attention on gender in smoked-farmed fish. In recent years, there seems to be a trend in smoked-fish marketing business in aquaculture. There is a gap in the literature on gender participation in the emerging enterprise chain. Nwabeze *et al.* (2019) investigated the strategies used by smoked fish marketers in Kainji Lake Basin; however, the focus of their study was not on gender analysis. There is limited knowledge on the existing gender gaps in revenue, gender-based employees and wage rate of men, women and youths as well as the gender-based marketing efficiencies in wholesale smoked-fish marketing in the area. Based on this knowledge gap, the study analyzed gender in wholesale fish marketing in the Kainji Lake Basin, Nigeria. Specifically, the study identified the roles of individual actors in fish marketing, determined the profitability of fish marketing in the area, analyzed the marketing efficiencies, and estimated gaps in the fish marketing chain.

MATERIALS AND METHODS

Study Area

The study was carried out in Kainji Lake Basin, Nigeria. The area lies between Latitudes 9° 50' and 1° 55' N and longitudes 4° 23' and 4° 51' E (Omeje *et al.*, 2020). It has a total area of 1,270.00 km² with a length of 136.00 km, a width of 24.00 km, a maximum head elevation of 141.73 m and a maximum tail elevation of 104.00 m (Mayomi and Olorok, 2014; Salami *et al.*, 2015). Kainji Lake Basin is the largest man-made lake in Nigeria, thus, providing livelihood opportunities to fish farmers, fisherfolks and fish marketers in the area.

Sampling Procedure

A two-stage sampling procedure was used to select smoked-fish marketers in the study. The first stage involved the purposive selection of 13 communities based on the availability and concentration of smoked-fish marketers in the communities. The selected communities were Monai, Malale, New Bussa, Kokoli, Tungan Alhaji Danbaba, Yauri, Wara, Cover dam, Tungan Nailo, Shagunu, Mahuta, Gafara and Wawu. In the second stage, proportional random sampling was used to select eight wholesale marketers from Monai, six from New Bussa, five each from Malale, Kokoli, Yauri and Wara, four each from T. Nailo, Shagunu, Mahuta, Gafara and Wawu, three each from T.A. Dambaba and Cover dam making a total of 60 wholesale fish marketers selected from a population of 107 wholesale fish marketers retrieved from the list of registered members in the fish marketers' association. The summary of the sampling procedure used is presented in Table 1.

Data Collection and Analysis

Primary data were collected from smoke-fish marketers with an interview schedule. Data were collected on gender roles of the employees of each respondent; the value of fixed assets, revenue and expenses, gender-based employees and wage rate paid to hired labour. The data were categorized into three groups. The first and second groups were the men and women above 35 years of age, while the third group was the youths comprising male and female within 18-35 years of age. A total of 33 men, 9 women and 18 youths were successfully categorized from the sex-disaggregated data collected. Data were analyzed using descriptive statistics such as percentages and gender gap ratios. Also, profitability indicators such as Net profit margin, Return on Investment (ROI), marketing efficiency models were used to analyze of data.

Gender gap analysis

$$i. \text{ Gender ratios: } X_i = \left(\frac{a_i}{b_i}\right) \quad (1.1);$$

$$ii. \text{ Relative gender gaps: } Z_i = \left(\frac{a_i}{b_i} - 1\right) \times 100 \quad (1.2);$$

where X_i is ratios for men-women, women-youths and men-youths; Z_i is relative gender gap; a_i is values for men, women and youths; and b_i is values for men, women and youths.

iii. Profitability indicators

$$a. \text{ Net income (NI) = revenue - total expenses} \quad (1.3); \text{ where revenue = unit price} \times \text{quantity supplied; revenue is consumer purchase price; and NI is net marketing margin.}$$

$$b. \text{ Net profit margin} = \frac{\text{Net Income}}{\text{Revenue}} \times 100 \quad (1.4);$$

$$c. \text{ Return on investment} = \frac{\text{Net income}}{\text{Total Expenses}} \times 100 \quad (1.5);$$

$$iv. \text{ Marketing efficiency} = \frac{\text{Value Added}}{\text{Total Marketing Cost (TMC)}} \times 100 \quad (1.6);$$

where value added is consumer purchase price – cost of processed fish; total marketing cost is total expenses – cost of processed fish; where, cost of processed fish is producer selling price.

$$a. \text{ Shepherd's efficiency} = \frac{\text{Consumer purchase price}}{\text{Total Marketing Cost (TMC)}} \quad (1.7);$$

$$b. \text{ Acharya's efficiency (MME)} = \frac{\text{Producer selling price}}{\text{TMC + Net Marketing Margin}} \quad (1.8);$$

where MME is modified measure of marketing efficiency (Acharya, 2004; Girei *et al.*, 2021).

Table 1: Summary of sampling procedure adopted in the study

Communities	Population		Total	Sample size		Total
	Male	Female		Male	Female	
Yauri	5.00	3.00	8.00	3.00	2.00	5.00
Wara	4.00	2.00	6.00	3.00	2.00	5.00
T. Nailo	3.00	2.00	5.00	2.00	2.00	4.00
Shagunu	4.00	1.00	5.00	3.00	1.00	4.00
Mahuta	3.00	1.00	4.00	3.00	1.00	4.00
Gafara	3.00	2.00	5.00	2.00	2.00	4.00
Wawu	2.00	2.00	4.00	2.00	2.00	4.00
Monai	12.00	9.00	21.00	4.00	4.00	8.00
Malele	8.00	7.00	15.00	3.00	2.00	5.00
Kokoli	7.00	0.00	7.00	5.00	0.00	5.00
T.A. Dambaba	5.00	0.00	5.00	3.00	0.00	3.00
New Bussa	10.00	8.00	18.00	3.00	3.00	6.00
Cover dam	4.00	0.00	4.00	3.00	0.00	3.00
Total	70.00	37.00	107.00	39.00	21.00	60.00

Reconnaissance Survey (2020)

RESULTS AND DISCUSSION

Gender Roles in Smoked-Fish Marketing Chain

The results of gender roles in the wholesale smoked-fish marketing chain are presented in Table 2. Results showed that the highest proportions of the wholesale smoked-fish marketers indicated that youths were dominant in the tying and sealing of cartons with ropes (88.33%), loading and offloading of smoked-fish (75%), sorting and grading (65%) and arrangement of fish in cartons (65%) while equal proportions (50%) of the marketers reported that transportation to market centers was the responsibility of men and youths. Additionally, 45.00 and 41.67% of the fish marketers observed that supply of packaging materials was done by men and women, respectively. The implication of this is that the youths played the most active roles in fish marketing, followed by the men while the women played the least roles in wholesale smoked-fish marketing activities. The active participation of youths in the value chain justifies livelihood opportunities the marketing chain presents to the youths due to the remuneration gotten from the activity as well as mastery of skills which can transcend to entrepreneurship. This is one aspect that the WorldFish (2018) Nigeria strategy emphasizes increasing the opportunities of youths in the aquaculture value chain through rewarding employment opportunities and entrepreneurship. However, the low participation of women in these gender roles in the wholesale smoked-fish making can also be traced to the socio-culturally embedded perceptions which significantly differ for men and women as established in the literature (Anderson *et al.*, 2017; Acosta *et al.*, 2020). This implies that women's participation can be increased through advocacy for increased women's contribution in decision making in the household as well the community. This is because, Acosta *et al.* (2020) empirically reported contradictory levels of influence by men and women living in the same household. Hence, policy on increasing women's participation in wholesale fish marketing especially in roles that will enhance their income levels should be adopted.

Estimation of Cost and Returns and Gender Gaps in Wholesale Smoked-Fish Marketing

Presented in Table 3 is the result of the analysis of value of fixed assets, revenue and gender-based employees in wholesale fish marketing. The value of the fixed asset identified was ₦358,484.85 for the men, ₦363,333.33 for the women and ₦368,888.90 for the youths. It indicates that there were no obvious gendered differences in the value of fixed assets owned by wholesale smoked-fish marketers. The result further showed that the revenue realized per month by the men was ₦6,286,887.86 while the women realized about ₦4,543,835.34 revenue; whereas, the youths realized ₦5,060,614.30 revenue per month. This could indicate that the women had a lower product bargaining strength compared to the men, as observed in the actual prices the women sell their smoked fish. Evidence can be seen in the quantity supplied and the selling price of fish between the men and women. This is because a stronger bargaining power for women will transcend to higher income which in turn empowers them to make individual decisions that were initially denied and make significant contributions to the household allocation of resources (Arthur-Holmes and Busia, 2020). It further shows the livelihood opportunities wholesale smoked-fish marketing can bring to aquaculture value chain actors in the study area. This confirms Mutambuki and Orwa's (2014) finding that wholesale fish marketing can bridge the gap in providing alternative sources of livelihood to people in the local communities. Furthermore, the result indicated that the men in wholesale fish marketing employed an average of one man, two women and two youths, while the women employed an average of one man, one woman and two youths while the youths in wholesale fish marketing employed an average of one man, two women and two youths. This implies that quite a large number of youths were employed in the wholesale marketing chain than men and women. This is because most of the activities such as loading and offloading, tying and sealing of cartons and in some cases, the transportation of fish to market centers are mostly done the youths.

Table 2: Roles in wholesale smoked-fish marketing chain

Activities	Men (%)	Women (%)	Youths (%)
Supply of packaging materials	45.00	41.67	13.33
Sorting/grading	11.67	23.33	65.00
Arrangement of fish in cartons	11.67	23.33	65.00
Tying/sealing of carton with ropes	11.67	0.00	88.33
Loading and offloading	25.00	0.00	75.00
Transportation to market centers	50.00	0.00	50.00

Field Survey (2020)

Also presented in Table 4 is the cost and returns per month in wholesale fish marketing. The results of the analysis showed that the net income for the men, women and youths were ₦279,552.46, ₦170,837.08 and ₦145,587.46, respectively; thus, indicating that wholesale fish marketing is a profitable business in the area; although, the men had a higher net income than the women and youths. The major objective of any enterprise is profit, and fish marketing has shown that it a profitable economic activity for the men, women and youths in the area.

The net profit margin on the other hand, was 4.45, 3.76 and 2.88% for the men, women and youths, respectively. This implies that to every ₦1 of sales, the men, women and youths realized about 4, 3 and 2 Kobo as profit respectively; even though the profit realized by the men is marginally greater than that realized by the women and youths, the result has not deviated from existing literature (Nwabeze *et al.*, 2019; Azeez *et al.*, 2021) supporting the profitability of fish marketing. Furthermore, the ROI for the men was 4.65%, while

the ROIs for the women and youths were 3.91 and 2.96% respectively meaning that the men and women generated more values above every ₦1 invested in fish marketing than the youths. This underscores the relevance of fish marketing in contributing to household income and employment in the area. This is because the profits realized can be a good income source for meeting household demands for food, education and other needs.

Marketing Efficiencies of Wholesale Smoked-fish Marketing

Results of the marketing efficiencies of wholesale smoked-fish marketing for men, women and youths are presented in Table 5. The result showed that the men's marketing efficiency was 228.26%. In comparison, the marketing efficiencies for the women and youths were 196.42 and 176.66%, respectively. The Shepherd's efficiency on the other hand, was 28.84 for the men, 25.65 for the women and 26.65 for the youths while the Acharya's efficiency was 11.64 for the men, 12.06 and 14.08 for the women and youths, respectively. The result implies that wholesale fish marketing is efficient which concurs with Osundare and Adedeji (2018) that fish marketing is efficient. However, the marketing efficiency of the men cumulatively, is higher than that of the women and youths. This can be attributed to the volume of fish supplied by the men and their bargaining power which was relatively higher for the men than the women and youths.

Table 3: Information on gender-based value of fixed assets, revenue, gender-based employees and wage in wholesale fish marketing

Items	Men			Women			Youths		
	MN	MUP (₦)	TP (₦)	MN	MUP (₦)	TP (₦)	MN	MUP (₦)	TP (₦)
<i>Fixed assets</i>									
Shed/store	1.00	358484.85	358484.85	1.00	363333.33	363333.33	1.00	368888.90	368888.90
<i>Revenue</i>									
a) Quantity of BC per month	40.00			15.56			27.56		
b) Quantity of MC per month	59.38			59.12			51.22		
c) Quantity of SC per month	73.02			63.32			69.22		
d) Price of BC		60227.27			58611.11			51027.78	
e) Price of MC		37636.36			37333.33			40000.00	
f) Price of SC		22500.00			22500.00			23194.00	
Revenue BC = a × d			2409090.80			911988.87			1406325.62
Revenue MC = b × e			2234847.06			2207146.47			2048800.00
Revenue SC = c × f			1642950.00			1424700.00			1605488.68
Total revenue			6286887.86			4543835.34			5060614.30
<i>Employees</i>									
		Wage/M	TW/M		Wage/M	TW/M		Wage/M	TW/M
Men	1.24	4484.84	5561.21	1.11	4577.77	5081.32	1.20	4133.33	4959.99
Women	1.85	4412.12	8162.42	1.44	4044.44	5823.99	1.67	4422.22	7385.11
Youths	2.21	4751.52	10500.85	2.11	4400.00	9284.00	2.16	4844.44	10463.99

Field Survey (2020). MN - mean number, MUP - mean unit price/cost, TP - total price/cost, TW/M - total wage per month, Wage/M - wage per month. BC - big carton, MC - medium carton, SC - small carton

Table 4: Estimates of cost and returns per Month in wholesale smoked-fish marketing per month

Item	Men (₦)	Women (₦)	Youths (₦)
Revenue from sales	6,286,887.86	4,543,835.34	5,060,614.30
<i>Expenses</i>			
Cost of processed fish	5,789,378.62	4,195,826.93	4,725,116.68
Cost of packaging materials	11,633.18	43,957.70	10,593.05
Transportation cost	172,400.00	138,000.00	148,000.00
Wages	24,224.48	20,189.31	22,809.09
Labour (loading and offloading)	8,620.00	6,900.00	7,400.00
Depreciation	579.12	592.59	608.025
Tax/levy	500.00	500.00	500.00
Total expenses	6,007,335.40	4,372,998.26	4,915,026.84
Net income after tax (NIAT) = revenue – expenses	279,552.46	170,837.08	145,587.46
Net profit margin (%) = NIAT / revenue × 100	4.45	3.76	2.88
Return on investment (%)	4.65	3.91	2.96
Benefit cost ratio	1.05	1.04	1.03

Field Survey (2020)

Table 5: Wholesale smoked-fish marketing efficiencies

Efficiencies (%)	Men	Women	Youths
Marketing efficiency	228.26	196.42	176.66
Shepherd's efficiency	28.84	25.65	26.65
Acharya's efficiency	11.64	12.06	14.08

Field Survey (2020)

Gender Gaps in Wholesale Smoked-Fish Marketing

The gender gap ratios in wholesale smoked-fish marketing are presented in Table 6. The result showed that the gender gap ratio in the value of fixed assets between men and women was 0.99, the ratio between the men and youths was 0.97 and the ratio between the women and youths was 0.98 meaning that there is an almost equal value of fixed assets invested by the men, women and youths in wholesale fish marketing in the area.

The revenue ratio showed that the ratio between men and women was 0.72 and between men and youths was 0.80. The ratio between women and youths was 0.89 which implies that there is no glaring inequality in the revenue received by the men, women and youths in wholesale fish marketing. However, the result showed an inequality in the number of gender-based employees in the chain, especially in the ratio of men and youths (0.55). The ratio of men and women in terms of employees was 0.72 while the ratio of women and youths was 0.76 implying slight equality in the number of

women and youths employed in the marketing chain. The ratio for the wage paid to hired labour between the men and women was 0.98, the ratio between the men and the youths was 0.94 and the ratio between the women and youths was 0.92, which means that there is no obvious difference in the amount paid as wage to men, women and youths employed in wholesale fish marketing in the area. This result implies that the dominance of women in fish marketing is being threatened by the emergence of men and youths in the chain. This is because the roles of women in the fisheries value chain, especially in post-harvest activities have been well documented (Sornkliang *et al.*, 2018; Ike-Obasi and Ogubunka, 2019), hence, a scenario of near gender equality in the wholesale fish marketing chain portends a danger to the continues participation of women in the aquaculture value chain. This is because the men, using their greater finance strength are most likely to displace the women in the near future. Also, their lack of strong bargaining power compared to the men and youths, as established in this study, further validates the impending danger of participation of women in the fishery sector. This calls for strong policy that must protect the interest of women in the aquaculture value chain especially in value chain nodes (processing and marketing) where their participation is prevalent.

Table 6: Gender gaps in wholesale fish marketing

Indicators	Absolute gender gap	Relative gender gap (%)	Gender gap ratio
<i>Value of fixed assets</i>			
Men and women	4,848.00	1.35	0.99
Men and youths	10,404.00	2.90	0.97
Women and youths	5,556.00	1.53	0.98
<i>Revenue</i>			
Men and women	1,743,053.00	38.36	0.72
Men and youths	1,226,274.00	24.23	0.80
Women and youths	516,779.00	11.37	0.89
<i>Employment</i>			
Men and women	0.50	39.83	0.72
Men and youths	1.00	83.05	0.55
Women and youths	0.50	30.90	0.76
<i>Wage</i>			
Men and women	105.79	2.46	0.98
Men and youths	266.68	6.06	0.94
Women and youths	372.47	8.68	0.92

Field Survey (2020)

CONCLUSION

The main objective of this study was to investigate gender in wholesale smoked fish marketing in Kainji Lake Basin, Nigeria. The findings showed that the youths perform most of the tasks involved in wholesale smoked-fish marketing such as sorting and grading, arrangement in cartons, tying and sealing the cartons, loading and offloading and transportation to market centers. The ratio in terms of value of fixed assets, revenue, employment and wage pointed out a marginal gap between the men, women and youths. Finally, the result established that wholesale fish marketing is a profitable business in Kainji Lake Basin with positive profit margins for the men, women and youths. Therefore, it is recommended that capacity building which targets women and youths should be adopted and implemented by government and other relevant agencies in order to enable them compete equally with men.

REFERENCES

- Acharya S.S. (2004). *Agricultural Marketing in India* (4th edition). Oxford and IBH Publishing Company Pvt., Limited, 644 pp.
- Acosta M., van Wessel M., van Bommel S., Ampaire E., Twyman L.J. and Feindt P.H. (2020). What does it mean to make a 'joint' decision? Unpacking intra-household decision making in agriculture: Implications for policy and practice. *J. Dev. Stud.*, **56** (6), 1210-1229
- Adedeji T., Osundare F. and Ajiboye A. (2019). Profitability and marketing efficiency of smoked fish: An empirical evidence from Ondo State, Nigeria. *Int. J. Agric. Ext. Rural Dev. Stud.*, **6** (3), 26-33
- Alamu S.O. and Mdaihi M. (1994). Socio-economic survey of women in artisanal fisheries in Kainji Lake area: A case study of Wawu. Annual Report, Nigerian-German Kainji Lake Fisheries Promotion Project, National Institute for Freshwater Fisheries Research
- Anderson C.L., Reynolds T.W. and Gugerty M.K. (2017). Husband and wife perspectives on farm household decision-making authority and evidence on intra-household accord in rural Tanzania. *World Dev.*, **90**, 169-183
- Anthonio Q.B.O. (1995). Fish marketing survey in the Kainji Lake Basin. Report, Nigeria-German (GTZ) Kainji Lake Fisheries Promotion Project
- Arthur-Holmes F. and Busia K.A. (2020). Household dynamics and bargaining power of women in artisanal small-scale mining in sub-Saharan Africa: A Ghanaian case study. *Resour. Policy*, **69**, 1-10
- Azeez F.A., Kabir G.B., Amoo M.A. and Nosiru M.O. (2021). Marketing, distribution and consumption of fish in Ido Local Government Area, Oyo State, Nigeria. *Agro-Science*, **20** (2), 68-73
- Girei A.A., Ndanitsa M.A., Ogezi E. and Imam M.I. (2021). Smoked and fresh fish marketing in Toto Local Government Area of Nasarawa State, Nigeria: A comparative analysis. *Acta Sci. Pol. Zootech.*, **20** (1), 15-26
- Ifejika P.I., Nwabeze G.O., Ayanda J.O. and Asadu A.N. (2009). Utilization of mobile phones as a communication channel in fish marketing enterprise among fishmongers in Western Nigeria's Kainji Lake Basin. *J. Info. Technol. Imp.*, **9** (2), 107-114
- Ike-Obasi J. and Ogubunka S.O. (2019). The roles of women in fish processing activities in some Local Government Areas of Rivers State, Nigeria. *Agric. Ext. J.*, **3** (2), 73-77
- Madaki M.J., Abba Y., Bose A.A. and Samaila M. (2019). Profitability of fresh fish marketing in Bauchi Metropolis, Bauchi State, Nigeria. *Int. J. Innov. Res. Dev.*, **8** (12), 84-89
- Mayomi I. and Olorok J.O. (2014). Monitoring the land-use and vegetation cover changes in the Kainji Lake Basin, Nigeria (1975-2006). *Afr. J. Environ. Sci. Technol.*, **8** (2), 129-142
- Mutambuki M.K. and Orwa B.H. (2014). Marketing strategies of commercial fish farming under Economic Stimulus Programme (ESP) in Kenya: A empirical study of Kitui County. *Int. J. of Humanities Soc. Sci.*, **4** (8), 111-121
- Nwabeze G.O., Faleke S., Tanko M. and Malgwi Y.Y. (2019). Strategies used by smoked fish marketers in Kainji Lake Basin, Nigeria. *J. Agric. Ext.*, **23** (1), 54-65
- Omeje J.E., Achike A.I., Arene C.J., Ifejika P.I. and Ifejika L.I. (2020). Participation of stakeholders in aquaculture value chain of the West Africa agricultural productivity programme in Nigeria. *J. Agric. Ext.*, **24** (4), 39-52
- Osundare F. and Adedeji T. (2018). Economic analysis of market performance of fresh fish in Lagos State, Nigeria. *Int. J. Environ. Agric. Biotechnol.*, **3** (2), 594-599
- Salami A.W., Mohammed A.A., Adeyemo J.A. and Olanlokun O.K. (2015). Evaluation of climate change impact on runoff in the Kainji Lake Basin using artificial neural network model. *Int. J. Water Resour. Environ. Eng.*, **7** (2), 7-16
- Siles J., Prebble M., Wen J., Hart C. and Schuttenberg H. (2019). *Advancing Gender in the Environment: Gender in Fisheries - A Sea of Opportunities*. IUCN and USAID, Washington, USA, 68pp.
- Sornkliang J., Tiaye R., Yenpoeng T., Kaewtankam V. and Pholcharoen J. (2018). Recognizing gender roles in the fisheries value chain: Local fishing communities of Thailand in focus. *Fish People*, **16** (2), 14-19
- Williams M.J. (2016). How are fisheries and aquaculture institutions considering gender Issues? Gender in aquaculture and fisheries: The long journey to equality. *Asian Fish. Sci. Spec. Iss.*, **29**, 21-48
- WorldFish (2018). *WorldFish Nigeria Strategy: 2018-2022*. Penang, Malaysia