African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)
www.abjournals.org

ANALYSIS OF GENDER PARTICIPATION IN FISH FARMING AND INCOME DEVELOPMENT OF RURAL WOMEN IN MAKURDI LOCAL GOVERNMENT AREA, BENUE STATE, NIGERIA

Kachina Eugene Iorwuese[1] and Hiam Aondoawase[2]

[1]Department of Economics, School of Secondary Education (Arts and Social Sciences), College of Education, Katsina- Ala, Benue State, Nigeria.
Email: eugenekachina@gmail.com; Tel.: 07031590571

[2]Department of Economics, School of Secondary Education (Arts and Social Sciences), College of Education, Katsina- Ala, Benue State, Nigeria.
Email: hiamaondoawase@gmail.com; Tel.: 08134725128

[*]Corresponding Author's Email: eugenekachina@gmail.com; Tel.: 07031590571

Cite this article:

Kachina, E. I., Hiam, A. (2025), Analysis of Gender Participation in Fish Farming and Income Development of Rural Women in Makurdi Local Government Area, Benue State, Nigeria. African Journal of Economics and Sustainable Development 8(1), 117-132. DOI: 10.52589/AJESD-QJQS6BWU

Manuscript History

Received: 4 Jan 2025

Accepted: 1 Feb 2025

Published: 5 Mar 2025

ABSTRACT: *The study analysed gender participation in fish farming and income development of rural women in Makurdi Local Government Area, Benue State, Nigeria. The study adopted a cross-sectional survey research design. The population of the study was 3,280 registered fish farmers in the study area including men and women. Systematic random sampling technique was employed in selecting 357 respondents. Questionnaire was adopted for data collection. Data was analysed using charts, frequencies, percentages, mean, standard deviation, t-test and simple regression analysis. The findings of the study showed that there was a significant difference in gender participation in fish farming. The study also revealed that the level of income development amongst rural women in the study area was low. The study further established that gender participation in fish farming has a significant relationship with income development amongst rural women. Factors militating against fish farming amongst rural women were social norms and customs, inadequate loans access among others. Strategies for addressing factors militating against fish farming amongst rural women were identified as less gender inequality and deprivation in fish farming, collateral free loans for rural women participating in fish farming among others. The study concluded that creating equal opportunities for both men and women participation in fish farming will have a great impact on income development of rural women. The study recommended that all stakeholders interested in gender equality should ensure that there should be less gender inequality and deprivation in fish farming in the study area.*

KEYWORDS: Analysis, Gender participation, Fish farming, Income development, Rural women.

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)

www.abjournals.org

INTRODUCTION

Fish farming, also known as aquaculture, contributes tremendously in worldwide food security and economic growth. As the demand for fish increases, so does the need to understand the dynamics of participation and income generation across genders within the industry. Historically, fish farming has been perceived as a predominantly male-dominated sector. However, recent trends indicate a growing participation of women in various aspects of the industry, from small-scale operations to larger commercial enterprises.

Chin, Nhuong, Shanali, Charles, Timothy and Michael (2019) asserted that fast population and income progress in Africa are driving expanding demand for fish. Therefore, as the demand for fish continues to rise, especially in rural areas, aquaculture presents an opportunity to improve food security and promote economic development. For rural women in Makurdi Local Government Area of Benue State, who seem to be often marginalized from mainstream economic activities, fish farming offers a potential pathway for income generation and empowerment for them. So, gender disparities in occupations, economic opportunities, decision-making among others have seemed to pose significant challenges in income development of rural women.

Notably, fish farming provides substantial food and income to most settlers along the riverine areas in Benue State given its nutritional and livelihood values. Fish are a very high source of protein and have great nutritional value. The protein and other nutrients in fish is necessary for mental and physical growth, particularly to children, and it constitutes a crucial aspect of a healthy food. Considering the fact that Nigeria and Africa as a whole suffer much from insufficient intake relative to nutritional needs as well as excessive and unbalanced intake of dietary food, fish production will be an important source of dietary food.

Fish farming is the practice of commercially nurturing fish in confined surroundings to be killed and sold for human consumption (New Roots Staff, 2022). Carl, Christopher and Alan (2024) concurred that fishery production denotes the worldwide trade that comprises the harvesting of fish for income, which generates billions in returns and creates employment to millions of people. Although fish farming is the fastest growing food producing segment in the world and creates substantial employment opportunities at large scales, men and women are not essentially able to participate in fish farming value chains equally, and the benefits may not be equally distributed between them (Kruijssen, McDougall & van Asseldonk, 2018). Bearing in mind the crucial contributions of women in agriculture and fisheries, Kafumukache, Moose, Nambeye and Siwila (2024) emphasized the multidimensional participation of women across numerous stages of the fish value chain, covering pond management, harvesting, processing and marketing.

Given the above scenario, women participation in fish production especially rural women has the potential to significantly improve their income and livelihood. Fish production or farming may serve as a reliable source of income diversification, reducing reliance on crop farming, which is vulnerable to climate change and seasonal fluctuations. Increased income from fish farming can enhance the financial independence of women, improve household welfare, and contribute to poverty alleviation in rural communities. That is, rural women participation in commercial fish production will boost their income level if their extent of participation in the process is not highly limited or ignored.

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)

www.abjournals.org

Udemezue and Odia (2021) was worried that gender inequality is one of the powerful forces of food insecurity because individuals who are deprived of access or unable to engage in labour, especially women encounter so many of discrimination in quest of education, land for cropping, job, credit, training among others. These challenges may restrict women's level of engagement in fish farming which is necessary for their income development. Nevertheless, the world over, women have been the vanguard for fighting against food insecurity. This is not an exception in Africa, and Nigeria to be specific where women contributed to production of about 78 percent of the continent's food such as vegetables, meat from livestock on survival level without adequate resources for training and other production processes (Idiku, 2019). Therefore, as a fish production chain considers that the entire stakeholders should intervene and interact in fish production and consumption, this study assessed gender participation in fish farming and income development of rural women in Makurdi Local Government Area of Benue State.

Statement of the Problem

Fish farming has been faced with different challenges in the rural communities of Makurdi Local Government Area. For instance, most fish farmers in the rural communities have limited infrastructure and technology which are supposed to stimulate fish production. Some of the infrastructures seemed to be insufficient including access to reliable electricity, water supply, and transportation networks. More so, fish farmers in the study area often struggled to access high-quality fish seed (fingerlings) and feed which in turn may result in poor-quality inputs and low productivity. Sometimes, the inability of the farmers to secure quality input may be as a result of limited access to credit. Thus, the inability of fish farmers, especially women, to obtain credit facilities may prevent many of them from expanding fish production. Considering all these factors that may complicate fish farming in most of the rural areas in Makurdi Local Government Area especially women, it has become pertinent to analyze gender participation in fish farming and income development of rural women in Makurdi Local Government Area of Benue State.

Objectives of the Study

The specific objectives of this study were to:

i. Find out if there is difference in gender participation in fish farming in Makurdi LGA;

ii. Determine the level of income development amongst rural women in Makurdi LGA;

iii. Examine relationship between gender participation in fish farming and income development amongst rural women in Makurdi LGA;

iv. Investigate the factors militating against fish farming amongst rural women in Makurdi LGA; and to

v. Determine strategies that may be adopted in addressing factors militating against fish farming amongst rural women in Makurdi LGA.

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

Research Questions

The following research questions have been raised in line with the objectives of the study:

i. Is there any difference in gender participation in fish farming in Makurdi LGA?

ii. What is the level of income development amongst rural women in Makurdi LGA?

iii. Is there any relationship between gender participation in fish farming and income development amongst rural women in Makurdi LGA?

iv. What are the factors militating against fish farming amongst rural women in Makurdi LGA?

v. What are the strategies that may be adopted in addressing factors militating against fish farming amongst rural women in Makurdi LGA?

Research Hypotheses

The hypotheses for the study were stated as follows:

$H_0$1: There is no significant difference in gender participation in fish farming in Makurdi LGA.

$H_0$2: Gender participation in fish farming has no significant relationship with income development amongst rural women in Makurdi LGA.

LITERATURE/THEORETICAL UNDERPINNING

Gender

Gender is a concept frequently related to roles and responsibility of males and females in the society as a social classification of sex (Udemezue & Odia, 2021). Gender involves the physical and biological difference between men and women. However, the emphasis of gender analysis is not biological differences between men and women but rather on their experiences as members of society (Udemezue & Odia, 2021). Thus, gender has become the social classifications of women and men through locally defined qualities of femininity and masculinity. United Nations Educational, Scientific and Cultural Organization (UNESCO) (2014) affirmed that gender encompasses the roles, behaviours, activities, and attributes considered suitable for men and women in a society at a given point in time. These attributes, opportunities and connections are largely constructed and cultured through socialization processes.

Income Development

Income is a unit of value that is adopted to quantify the production of goods and services in an economy. It can be generated through economic activities. Therefore, income is generally measured as the entire quantity of money received by individuals, households and companies at the period of time. Income serves as a source of wealth for people throughout their lives. The Organization for Economic Cooperation and Development (OECD) (2011) recognized income and wealth as the indispensable components of individual welfare since it helps

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

individuals to satisfy their desires and pursue numerous goals. Vrinda (2022) classified income as active income, portfolio income and passive income. Then, active income is earned through active participation in performing a job such as wages, salaries among others and portfolio income comes are obtain through investments such as dividends, interest, royalties et cetera whereas passive income deals with cash received by someone without active participation in doing the job such as cash earned through rental property, limited partnership or other business among others. Therefore, income development refers to the growth or change in income over time, both at the individual or household level and at broader economic levels, such as within a nation or globally.

Fish Farming

Fish farming is a division of aquaculture which deals with nurturing of fish in containers or enclosures under controlled or semi-controlled conditions normally for household or individual use as food or profit making (Adeoye, Oke, Eniola & Jatto, 2020). By implication, the practice of breeding, raising, and harvesting fish and other aquatic animals in regulated surroundings for money making, recreational, or personal use is known as fish farming. In nurturing aquatic species in a regulated setting, such as ponds, tanks, cages, or canals, required factors like water quality, temperature, feeding, and breeding conditions are carefully monitored and managed. This control helps maximize productivity and reduce the risk of overfishing in natural habitats. Common species raised in fish farming according to Ogunremi, Igbani, Onimisi and Shetur (2022) include Clarias spp, heterobranchus spp, Tilapia spp, and catfish, among others. However, Clarias spp commands high market price due to high demand, preferences among others. Experience has revealed that consumers prefer catfish because it is not as bony as Tilapia. Generally, Gwaska (2022) affirmed that the demand for fish was 2.7 million metric tons in 2019 while domestic production was 0.8 million metric tons. This implies that income development in the context of fish farming is a significant opportunity, particularly in rural and coastal areas where traditional farming or fishing may be the primary source of livelihood (Idiku, Ogbonna, Ogar & David, 2020).

Unfortunately, despite the impact that fish farming has on the income development, there are factors such as inadequacy of collateral security, high cost of fish feed, poor road network, inadequate transport facilities, inadequate credit facilities among others that affect fish production (Adeoye, Oke Eniola & Jatto, 2020; Mbah, Onah & Amah, 2017). International Fund for Agricultural Development (IFAD) (2024) added that in rural areas, several rural women endure to face momentous obstacles that limit their ability to fully participate in fish farming and equally benefit from lucrative economic activities. This implies that women do not have the same advantage as much as men from the opportunities provided by agricultural and rural transformation (Food and Agriculture Organization of the United Nations (FAO), 2023).

Theoretical Framework

The study adopted Women in Development (WID) Theory, propounded by Ann Oakley in 1974 to contest the traditional trickle-down postulation of development theories by underscoring the active participation of women in all facets of value chain progress and advancement. This theory opposed the idea that economic advancement inevitably benefits all and sundry, emphasizing the significance of women as active partakers rather than inactive beneficiaries of development benefits. According to Kafumukache, Moose, Nambeye and

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

Siwila (2024), Women in Development Theory considered the historical marginalization of women and advocated for practical empowerment strategies like creating business opportunities, increasing employment access, increasing financial inclusiveness, and improving educational opportunities for women. By implication, the theory recognized social, cultural, economic, and political factors determining women's involvement and underscored active participation of women for realizing benefits. Therefore, since the theory emphasized the transformation of gender relations to active involvement of women in all productive sectors, it is appropriate for this study given that the study focused on analyzing issue of gender participation in fish farming as an obstacle in income development of rural women which is germane in creating business and employment opportunities as well as increasing financial inclusiveness of women.

Empirical Studies

Ezeokoye, Mbaeri and Imoagwu (2024) examined the impact of small scale fish farming on the poverty reduction in the South-East zone of Nigeria. The study indicated that household spending has a direct positive relationship with each of these small-scale fish farming channels, as rise in individual spending by implication led to reduction in the level of poverty.

Kafumukache, Moose, Nambeye and Siwila (2024) assessed the role and form of women's participation in the fish value chain in small-scale farming in Lusaka Province, Zambia. The results of the study stressed the crucial contribution of women in different ways in the fish value chain, involving trading and processing, demonstrating their adaptability through a combination of traditional and modern methods.

A similar study which has to do with gender participation in fish production chain was carried out by Idiku, Ntui, Iyamah and Ochang (2022) in Akpabuyo Local Government Area, Cross River State, Nigeria. The study found out that the main fish value added activity was smoking and drying of fish using solar power and women have less access to resources and decision making.

The study was also conducted to determine the fish farming practices, development and constraints among fish farmers in Ibi Local Government Area (LGA), Taraba State, Nigeria by Ogunremi, Igbani, Onimisi and Shetur (2022). The study discovered that concrete tanks were typically employed by fish farmers, and fingerlings for stocking were sourced through personal hatchery with poly culture practices and monoculture techniques. The culture system was principally intensive. Clarias spp were cultured and fed on imported floating feed. The main limitations to fish production were insufficient infrastructure, high cost of inputs, low quality of fish seed and low extension services on fish farming.

Onyeneke, Iruo and Eze (2021) carried out research on fish farming and poverty reduction amongst men and women in the South-East zone of Nigeria. The study found out that fish farming significantly contributes to income of farmers in the selected communities. The study concluded that there is a positive and significant correlation between fish farming and poverty reduction.

Furthermore, Sanusi, Invider, Makarfi and Veenita (2020) carried out a study to determine the effect of gender on income disparity between men and women fish farmers in Kogi State, Nigeria. The study observed that gender difference has consequences on the income of female

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

farmers and it has a link to gender inequality of women in having access to productive resources.

Adeoye, Oke, Eniola and Jatto (2020) conducted a study to assess rural farmers' involvement in fish farming activities in Afijio Local Government Area of Oyo State, Nigeria. The findings of the study indicated that males mostly involved in technical aspects of post-harvest practices such as filleting, gutting, and sticking, while women mostly involved in frying, smoking, and marketing of fish.

Idiku, Ogbonna, Ogar and David (2020) assessed weather information needs of displaced artisanal fishermen in Bakassi Peninsula, Nigeria. The results showed that male dominated fishing activities using simple rented canoes and many respondents search for weather forecast information regularly and virtually all the respondents desire such information be disseminated in local language.

From the empirical literature reviewed, it was obvious that the findings of the previous studies varied. Some indicated positive relationships while others indicated negative relationships between fish farming and income development. Eventually, the findings have a serious influence on policy making and formulation for improving agriculture production through the mechanism of fish farming and income development. On this note, the motivation behind this research was to fill in a gap by not just looking at poverty reduction, but by analyzing how gender participation in fish farming can boost the income of women in rural communities in the study area.

METHODOLOGY

Research Design

The research employed a cross-sectional survey design. The cross-sectional survey design was considered as an appropriate design because it is suitable for collecting primary and reliable information.

Description of the Study Area

The study was carried out in Makurdi Local Government Area of Benue State, Nigeria. Makurdi is the capital of Benue State and it is situated on the South bank of the Benue River. Makurdi LGA is located on latitude 7˚337˚33' 00" N to 7˚477˚47' 00" N and longitude 8˚278˚27' 00" E to 8˚48˚4'00" E. It has an estimated population of 433,700 people with eleven council wards and it covers 804 km^2 land mass in a 16 km radius circle.

Population

The population of the study consisted of 3,280 registered fish farmers both men and women in Makurdi LGA. However, the utmost priority was on women since they were the targeted group.

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

Sample Size and Sampling Technique

The sample of 357 respondents were selected cutting across the entire eleven council wards using the systematic random sampling method. Meanwhile, the sample size was determined using the Taro Yamane's formula stated as thus:

$n = N/[1+N(e)^2]$

Where n = Sample size desired

N= Total population

e = Level of precision or sampling error (assumed as 0.05)

$n = 3280/1+3280(0.05)^2$

$n = 3280/1+3280x0.0025$

$n = 3280/1+8.2$

$n = 3280/9.2$

$n = 356.522$

$n = 357$

Therefore, since the study specifically focused on women in rural areas that were into fish farming, 179 women and 178 men were sampled for the study which constituted the sample size of 357 respondents.

Instrument for Data Collection

The study used structured questionnaires as an instrument of data collection. The questionnaire consisted of sections 'A, B, C, and D'. Section A contained demographic information; section B contained information on participation in fish farming, and section C contained information on factors militating against fish farming while section D contained information on strategies that will be used in addressing the factors militating against fish farming amongst rural women. The questionnaire had both open ended and closed ended questions. The researcher administered the questionnaires to the respondents; sufficient time was given for the completion of questionnaires and copies were collected on the spot by the research assistants.

Instrument for Data Analysis

Data was analyzed using charts, frequencies, percentages, mean, standard deviation, t-test and simple regressions analysis were employed in testing the hypotheses formulated at 0.05 alpha level of significance. The criterion mean was 2.50.

Model Specification

The study adopted the framework developed by Sanusi, Invider, Makarfi and Veenita, (2020) with slight modification by reducing the number of variables included in the model and substituting other variables with their proxies. Therefore, the model was explicitly express as:

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)

$$IDRW = \beta_0 + \beta_1 GEN + \beta_2 AGE + \beta_3 MAS + \beta_4 EDL + \beta_5 HUS + \beta_6 NFC + \beta_7 PFF + \varepsilon \quad (3)$$

where

IDRW = Income development of rural women proxies by average monthly income

GEN = Gender

AGE = Age (Years)

MAS = Marital Status

EDL = Educational Level

HUS = Household size

NFC = Number of fish caught per day

PFF = Participating in fish farming

β_0 = Constant

β_{1-7} = Parameters to be estimated

ε = Error term

RESULTS/FINDINGS

Difference in gender participation in fish farming in Makurdi LGA

Figure 1 showed the descriptive results of difference in gender participation in fish farming.

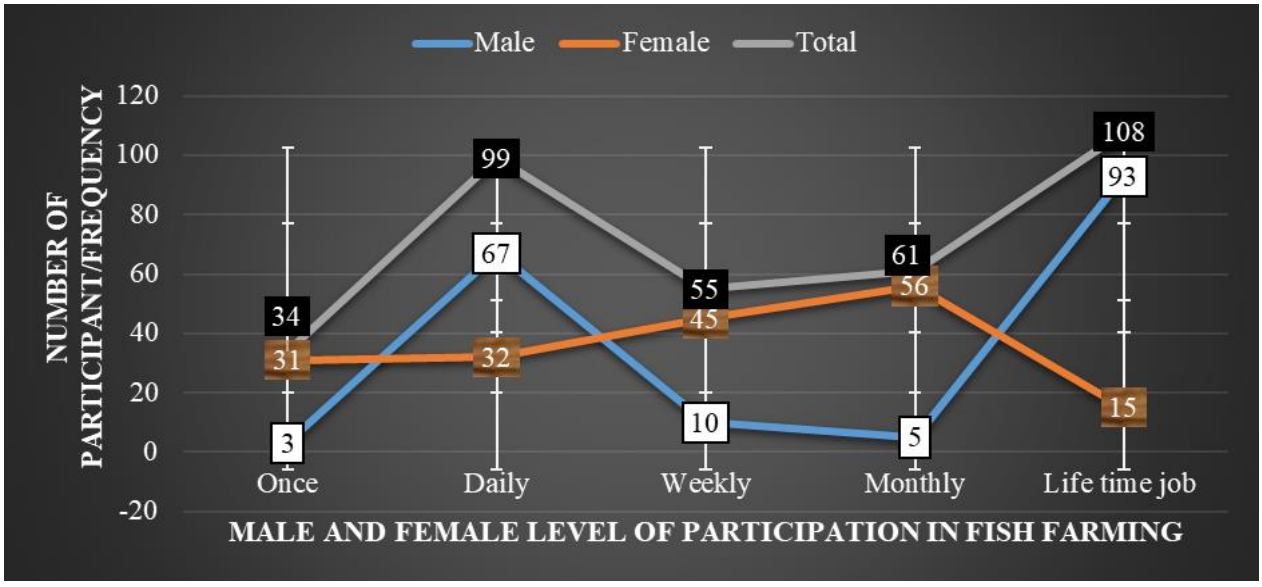

Figure 1: Line chart showing the difference in gender participation in fish farming

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)
www.abjournals.org

A comparative analysis of the respondents in respect of the level of participation of male and female in fish farming as in Figure 1 revealed that out of 108 respondents that accepted that fish farming was their life time job, 85 of the respondents were males while only 15 of the respondents were females. Conversely, out of 61 respondents that their level of participation in fish farming was monthly, 56 of the respondents were females whereas merely 5 of the respondents were males. Meanwhile, out of 34 and 55 respondents that agreed on participating in fish farming once and weekly, females dominated by having the responses rate of 31 and 45 while males were only 3 and 10 respectively. On the contrary, in the case of the 99 respondents that accepted participating in fish farming daily, 67 were males while 32 were females.

However, to find out if there was significant difference in gender participation in fish farming in Makurdi LGA, the hypothesis one which stated "there is no significant difference in gender participation in fish farming in Makurdi LGA" was tested using t-test statistics as in Table 1.

Table 1: t-test of the difference in gender participation in fish farming (n = 357)

S/No	Gender	N	Mean	Std.	Df	t	P-Value
1	Male	178	3.67	1.476	355	5.270	.000
2	Female	179	2.92	1.192			

Source: *Computed by Researchers using SPSS Version 27*

The results from Table 1 indicated the t-test value of 5.270 which was significant at 5% level of significance given that the p-value of 0.000 was less than 0.05 alpha level of significance. Therefore, hypothesis one was rejected. By implication, there was a significant difference in gender participation in fish farming in Makurdi LGA.

Level of income development amongst rural women in Makurdi LGA

Figure 2 depicted descriptive results of the level of income development amongst rural women

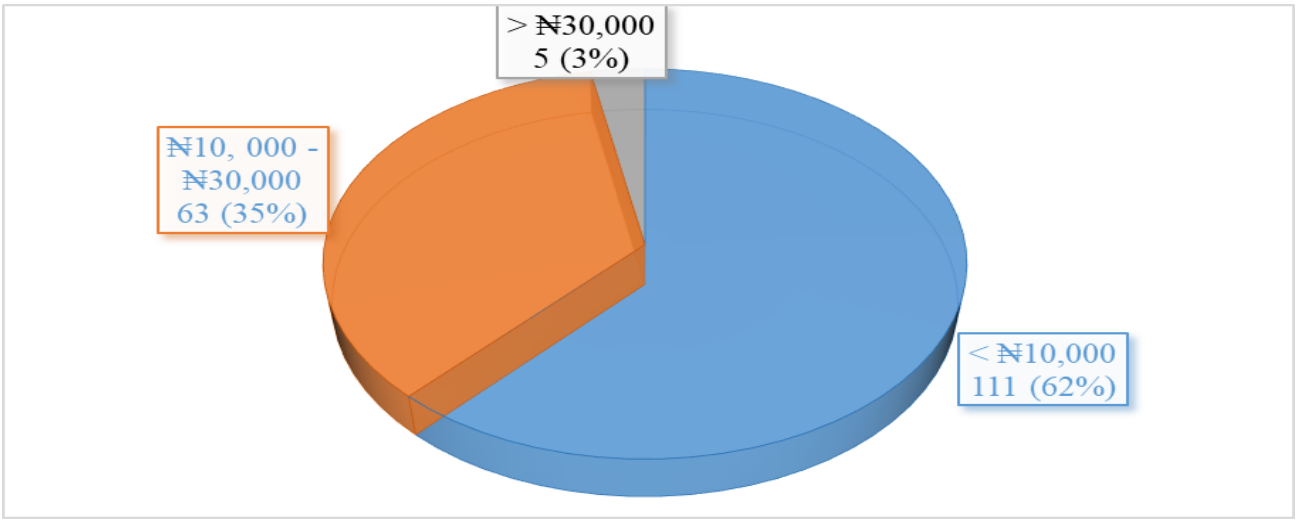

Figure 2: Pie chart showing the average monthly income of rural women

Figure 2 above revealed that the level of income development amongst rural women in Makurdi LGA was low since 111 rural women represented by 62% earned monthly income of less than ₦10,000 and 63 of them which constituted 35% earned monthly income of between ₦10,000

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)

- ₦30,000 while only 5 rural women representing 3% earned monthly income of more than ₦30,000.

Relationship between gender participation in fish farming and income development amongst rural women in Makurdi LGA

Table 2 depicted the descriptive results of the relationship between gender participation in fish farming and income development amongst rural women in Makurdi LGA.

Table 2: Relationship between gender participation in fish farming and income development amongst rural women in Makurdi LGA

S/No	Participation in Fish Farming	Female			Male		
		N	Mean	Std.	N	Mean	Std.
1	Once	31	9043.59	13051.690	3	14362.40	16122.170
2	Daily	32	31402.06	26116.867	67	43058.21	14918.286
3	Weekly	45	12319.18	17143.644	10	19070.60	7813.985
4	Monthly	56	13850.11	15343.708	5	18343.20	5206.090
5	Life time job	15	29777.06	20191.589	93	31551.15	12542.347
	Total	**179**	**17496.48**	**20315.596**	**178**	**34278.14**	**15383.690**

Source: *Computed by Researchers using SPSS Version 27*

The descriptive results in Table 2 revealed that the total mean income of female participation in fish farming was ₦17496.48 while the total mean income of male participation in fish farming was ₦34081.56.

Therefore, to ascertain if the relationship between gender participation in fish farming and income development amongst rural women was statistically significant, the hypothesis two ($H_0$2) which stated "gender participation in fish farming has no significant relationship with income development amongst rural women in Makurdi LGA" was tested using simple regression analysis.

Table 3: Relationship between gender participation in fish farming and income development

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.425130	0.150755	-2.820005	0.0051
GEN	0.883156	0.068705	12.85428	0.0000
AGE	0.038985	0.003230	12.07110	0.0000
MAS	-0.019235	0.030014	-0.640864	0.5220
EDL	0.020391	0.029230	0.697618	0.4859
HUS	0.018394	0.026121	0.704183	0.4818
NFC	0.000134	0.000240	0.560686	0.5754
PFF	0.019579	0.022572	0.867395	0.3863
R-squared	0.579716			
Adjusted R-squared	0.571286			
F-statistic	68.77016		Durbin-Watson stat	2.526224
Prob(F-statistic)	0.000000			

Source: *Computed by Researchers using E.view Version 10*

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

African Journal of Economics and Sustainable Development
ISSN: 2689-5080
Volume 8, Issue 1, 2025 (pp. 117-132)
www.abjournals.org

The simple regression results in Table 3 indicated that a unit increases in gender (GEN), age (AGE), educational level (EDL), household size (HUS), number of fish caught per day (NFC) and participating in fish farming (PFF) will positively improve income development among rural women by 0.883156, 0.038985, 0.020391, 0.018394, 0.000134 and 0.019579 respectively except marital status where a unit increases in marital status will have negative influence on income development among rural women by -0.019235. Likewise, all the variables were insignificant at 0.05 alpha level of significance except gender and age which were significant at 0.05 alpha level of significance. This implies that both gender and age were major significant predictors of income development among rural women in the study area. The adjusted R-square was 0.571286 meaning that about 57% changes in the income development among rural women were explained by the explanatory variables included in the model whereas 43% constituted other factors that cause changes in income development among rural women but not included in the model. The Durbin-Watson statistic value of 2.526224 was within the acceptable range of between 1.50 - 2.50 meaning that there was no serial correlation within the data. Also, the F-statistic was 68.77016 with Prob (F-statistic) of 0.000000 which was significant at 5% level of significance. Therefore, the null hypothesis two was rejected. By implication, gender participation in fish farming has a significant relationship with income development amongst rural women in Makurdi LGA.

Factors militating against fish farming amongst rural women in Makurdi LGA

Figure 3 showed the factors militating against fish farming amongst rural women in Makurdi LGA

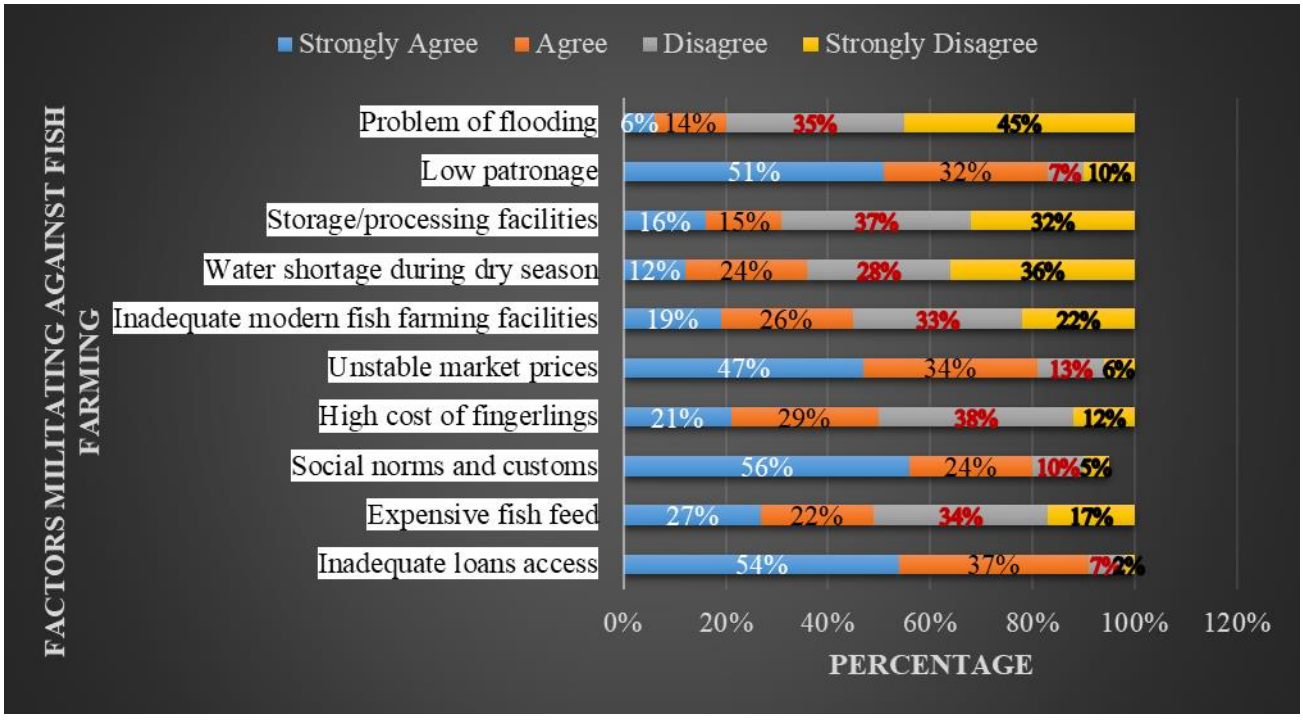

Figure 3: Bar chart showing factors militating against fish farming amongst rural women

Figure 3 showed that social norms and customs, inadequate loans access, low patronage and unstable market prices were the main factors militating against fish farming among rural women in the study area given that a reasonable number of respondents 200, 193, 182 and 168

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

out of the total number of 357 respondents which constituted 56%, 54%, 51% and 47% accordingly agreed with those items. Notwithstanding, high cost of fingerlings and expensive fish feeds were another factors militating against fish farming among rural women in the study area owing to the facts that the combined responses of those disagreed and strongly disagreed which cumulatively accounted for 50% and 49% correspondingly. However, problem of flooding, water shortage during dry season, storage/processing facilities and inadequate modern fish farming facilities were not main factors militating against fish farming amongst rural women since the combined responses of those disagreed and strongly disagreed with those items were 286, 246, 228 and 196 respondents which cumulatively constituted 80%, 69%, 64% and 55% respectively.

Strategies that may be adopted in addressing factors militating against fish farming amongst rural women in Makurdi LGA

Table 4 depicts strategies that may be adopted in addressing factors militating against fish farming amongst rural women in Makurdi LGA?

Table 4: Descriptive results of strategies that may be adopted in addressing factors militating against fish farming amongst rural women (n = 357)

S/N	Items	Responses				Mean	Std.
		SA	A	D	SD		
1	Education of women in rural areas on fish farming by extension workers	214 (59.9%)	71 (19.9%)	58 (16.2%)	14 (3.9%)	3.36	.890
2	Increase market access that will increase patronage	214 (59.9%)	71 (19.9%)	53 (14.8%)	19 (5.3%)	3.34	.919
3	There should be less gender inequality and deprivation in fish farming	209 (58.5%)	76 (21.3%)	55 (15.4%)	17 (4.8%)	3.34	.905
4	Government should subsidize fish feed for rural women	193 (54.1%)	92 (25.8%)	47 (13.2%)	25 (7.0%)	3.27	.939
5	Formation of association for rural women participating in fish farming for interventions	177 (49.6%)	108 (30.3%)	56 (15.7%)	16 (4.5%)	3.25	.879
6	Collateral free loans should be given to rural women participating in fish farming	157 (44.0%)	128 (35.9%)	56 (15.7%)	16 (4.5%)	3.19	.861
	Grand Mean	**1164 (54.3%)**	**546 (25.5%)**	**325 (15.2%)**	**107 (5.0%)**	**3.29**	**.900**

Source: *Computed by Researcher, 2024 using SPSS Version 27*

The data in Table 4 revealed that all the items (1-6) were strategies that may be adopted in addressing factors militating against fish farming amongst rural women in the study area given that their mean scores ranged from 3.36 - 3.19 and were above the criterion mean of 2.50. The grand mean value of 3.29 with standard deviation of .900 was also above the criterion mean of 2.50 which indicated that on the whole the respondents accepted that the items were strategies

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

that may be adopted in addressing factors militating against fish farming amongst rural women in Makurdi LGA.

DISCUSSION

The results from hypothesis one indicated that there was significant difference in gender participation in fish farming in Makurdi LGA. By implication, males' level of activities in fish farming differs from that of their females' counterparts. Hence, this finding reaffirmed that of Adeoye, Oke, Eniola and Jatto (2020) who reported that males mostly involved in technical aspects of post-harvest practices such as filleting, gutting, and sticking, while, women mostly involved in frying, smoking, and marketing of fish. However, Idiku, Ogbonna, Ogar and David (2020), Sanusi, Invider, Makarfi and Veenita (2020), and Idiku, Ntui, Iyamah and Ochang (2022) discovered that male dominated fishing activities and women have less access to resources and decision making. In the same vein, the findings of the study reaffirmed the notion of Women in Development Theory which opposes the historical marginalization of women in employment opportunities.

The findings from hypothesis two showed that gender participation in fish farming has a significant relationship with income development amongst rural women in Makurdi LGA. By implication, fish farming can improve income development of women in the rural communities. This finding is supported by the findings of Idiku (2019) who revealed that fish farming has a significant relationship with income development of women in the rural communities. The finding also aligned with that of Onyeneke, Iruo and Eze (2021), and Kafumukache, Moose, Nambeye and Siwila (2024) who observed that there was a positive and significant correlation between fish farming and poverty reduction and there was crucial contribution of women in different ways in the fish value chain.

IMPLICATION TO RESEARCH AND PRACTICE

The outputs/results of this research project are expected to have impact within the context of social, and economic. Considering the social aspects, findings of this research project may assist government and other partners interested in gender issues to discover that gender participation in fish farming is something that needs urgent attention that can go a long way in improving the welfare of rural women. On the economic perspective, the findings of this research project may assist in realizing the nexus between gender participation in fish farming and income development of rural women which is necessary for poverty reduction and economic development.

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

CONCLUSION/RECOMMENDATIONS

The study concluded that creating equal opportunities for both men and women participation in fish farming will have a great impact on income development of rural women in Makurdi Local Government Area. This can be achieved if the issues of social norms and customs, inadequate loans access, low patronage and unstable market prices which are the main factors militating against fish farming among rural women in the study area have been addressed. Thus, the study recommended that all stakeholders interested in gender equality should ensure that there should be less gender inequality and deprivation in fish farming, collateral free loans should be given to rural women participating in fish farming and increase market access that will increase patronage for fish products should be created in the study area.

REFERENCES

Adeoye, A.S., Oke, O. O., Eniola, O., & Jatto, K. A. (2020). Assessment of gender roles in fish farming activities among rural farmers in Afijio local government area of Oyo state, Nigeria. Nigerian Agricultural Journal, 1(2), 406-412.

Ann, O. (1974). Women in Development theory is Ann Oakley. In her book "women's work: The housewife, past and present,"

Carl, S., Christopher, R. H., & Alan, D. (2024). Fish conservation. Encyclopedia of Biodiversity (Third Edition), Academic Press, 1(1), 69-387.

Chin, Y. C., Nhuong, T., Shanali, P., Charles, C. C., Timothy, B. S., & Michael, J. P. (2019). Prospects and challenges of fish for food security in Africa. Global Food Security, 20(1), 17-25. https://doi.org/10.1016/j.gfs.2018.12.002.

Ezeokoye, L. I., Mbaeri, N. C. & Imoagwu, C. P. (2024). The impact of small scale fish farming on poverty reduction in the South-East zone of Nigeria. International Journal of Advanced Economics, 6(7), 251-263. DOI: 10.51594/ijae.v6i7.1279

Food and Agriculture Organization of the United Nations (FAO) (2023). The status of women in agrifood systems. Rome. https://doi.org/10.4060/cc5343en

Gwaska, D. M. (2022). Fish farming business plan. https://www.researchgate.net/publication/358730410

Idiku, F. O. (2019). Training needs of women vegetable farmers in the university of Calabar farm, Nigeria. Direct Research Journal of Agriculture and Food Science (DRJAFS), 7(6), 137-140. DOI: https://doi.org/10.5281/zenodo.3242020

Idiku, F. O, Ntui, O. E., Iyamah, D. A. & Ochang, D. O. (2022). Analysis of gender participation in the fish production value chain in Akpabuyo, Cross River State Nigeria. World Journal of Advanced Research and Reviews, 13(02), 131–135.

Idiku, F. O. Ogbonna, K., Ogar, P. O, & David, G. M. (2020). Weather information needs of displaced artisanal fishermen in Bakassi Peninsula Nigeria. Library Philosophy and Practice (e-journal), 4134.

International Fund for Agricultural Development (IFAD). (2024). Rural women. Retrieved from https://www.ifad.org/en/ruralwomen#:~:text=Context,often%20undermined%20by%20g ender%20inequalities.

Kafumukache, M. E., Moose, J., Nambeye, E., & Siwila, J. (2024). Role and form of women's participation in the fish value chain in small-scale farming in Lusaka Province.

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU

International Journal of Research and Innovation in Social Sciences, (IJRISS), 8(1), 1949- 1958

Kruijssen, F., McDougall, C. L., & van Asseldonk, I. J. M. (2018). Gender and aquaculture value chains: A review of key issues and implications for research. Aquaculture, 493(1), 328- 337. https://doi.org/10.1016/j.aquaculture.2017.12.038.

Mbah, E.N.1, Onah, O. & Amah, N.E (2017). Analysis of factors affecting rural women in family farming in Benue State, Nigeria. International Journal of Research Studies in Agricultural Sciences (IJRSAS), 3(8), 15-20

New Roots Staff (2022). Fish farms: What is fish farming and why is it bad? Los Angeles: New Root Institute. https://www.newrootsinstitute.org/

Ogunremi, J. B., Igbani, F., Onimisi, M. M., & Shetur, C. Y. (2022). Assessment of fish farming practices, development and constraints among fish farmers in Ibi Local Government Area, Taraba State, Nigeria. Nigerian Agricultural Journal, 53(1). 260-266.

Onyeneke, R. U., Iruo, F. A., &Eze, C. C. (2020). Employment creation and constraints to fish farming in the Niger Delta Region of Nigeria. International Journal of Environmental Science Research, 23(2) 556108. https://doi.org/10.19080/IJESNR

Organization for Economic Cooperation and Development (OECD) (2011). "Income and wealth", in how's life? measuring well-being. Paris: OECD Publishing. DOI: https://doi.org/10.1787/9789264121164-4-en

Sanusi, S. M., Invider, P. S., Makarfi, A. M., Veenita, K. (2020). Effect of gender on income gap among fish farmers in Nigeria's Kogi State. Atatürk Üniversitesi Kadın Araştırmaları Dergisi, 2(2), 27-45.

Udemezue, J. C., Odia, F. N. (2021). Gender disparities and roles of women in agriculture in the South Eastern Nigeria. Biomed J Sci & Tech Res, 36(4). BJSTR. MS.ID.005892

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2014). UNESCO priority gender equality action plan 2014 – 2021. https://unesdoc.unesco.org/ark:/48223/pf0000227222

Vrinda, M. (2022). Three types of income: active, passive and portfolio. https://www.analyticssteps.com/blogs/three-types-income-active-passive-portfolio

Article DOI: 10.52589/AJESD-QJQS6BWU
DOI URL: https://doi.org/10.52589/AJESD-QJQS6BWU