Asian Journal of Agricultural Extension, Economics & Sociology

38(5): 116-134, 2020; Article no.AJAEES.57401
ISSN: 2320-7027

Gender Differentials in Poverty among Crayfish Harvesting Households in Niger Delta Region of Nigeria

E. J. Etim[1*], K. M. Baba[1], M. A. Ojo[1] and M. A. Ndanitsa[1]

[1]Department of Agricultural Economics and Farm Management, Federal University of Technology, Minna, Niger State, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. Author EJE designed the study, performed the statistical analyses, wrote the protocol and wrote the first draft of the manuscript. Authors KMB, MAO and MAN managed the analyses of the study and literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2020/v38i530353
Editor(s):
(1) Dr. Adesoji Solomon Adedapo, Obafemi Awolowo University, Nigeria.
Reviewers:
(1) Gbehi Clément, University of Abomey-Calavi, Bénin.
(2) A. S. Agus Putra, University of Samudra, Indonesia.
Complete Peer review History: http://www.sdiarticle4.com/review-history/57401

Original Research Article

Received 25 March 2020
Accepted 01 June 2020
Published 24 June 2020

ABSTRACT

The contribution of women in artisanal crayfish harvesting and other related fishery products (seafood) cannot be overemphasized, yet they are being un-noticed economically. This study examined empirically gender differentials in poverty among crayfish harvesting households in Niger Delta Region of Nigeria. A multi-stage and stratified random sampling techniques was employed in selecting a total of 409 (300 males and 109 females) headed crayfish harvesting households. A structured questionnaire and interview schedule survey was used for the study. FGT model was used to analyse gender differences in poverty status of the respondents while Oaxaca–Blinder (O-B) Decomposition Technique was used to decomposed poverty. The result revealed that, female harvesters are more vulnerable to poverty than their male counterparts in the region with their poverty incidence (0.59), poverty depth (0.33) and poverty severity (0.18) being higher than 0.33, 0.32 and 0.17 for males. The aggregate decomposition revealed that gender differentials gap was mostly being accounted for by coefficient component (structural or discrimination effect) than endowment component (characteristics or composition effect) and interaction effect. The detailed

**Corresponding author: E-mail: precioustreasure2013@gmail.com;*

decomposition that explained the gender differential gap indicates that marital status, household size and income of crayfish harvesting are the major factors that explained the endowment effect while marital status, labour, income of crayfish harvesting and access to crayfish harvesting net are the factors that explained the structural effect. Additionally, the result of the analysis of poverty coping strategy use index (PCSUI) revealed that spending of saved income (8.16%), children eating first (8.15%), intensifying of the amount of work done on the crayfish fishing to increase output (8.03%), purchasing items on credit (7.98%), diversify off-fishing activities to increase income (7.50%), borrowing money for household upkeep (7.20%), reduction in food consumption (7.20%) among others were the major poverty coping strategies used in the area. The study recommended that gender equality and equity be ensure in the provision, allocation and distribution of productive (harvesting) resources/services. More so, bias and discriminatory laws, norms, belief and traditional restrictions against women should be review and repeal while hidden ones be eliminated among others.

Keywords: Gender differentials; poverty; crayfish harvesting households; Niger delta region; Nigeria.

1. INTRODUCTION

The work of crayfish harvesting is one of the major business in the fishing sub-sectors of agriculture being practiced by both men and women households in the Niger Delta Region of Nigeria. It is an important profession which is capable of reducing poverty, ensuring human and livestock food security, creating employment, providing foreign exchange, enhancing earnings, health and improving nutrition by increasing protein intake and other dietary vitamins in our daily food consumption [1]. It is highly priced and demanded in both local and international markets. Nigeria is among tropical countries endowed with shrimp resources (crayfish) with a production capacity of 12,000 metric tons (MT) per year [2]. Nevertheless, Ele and Nkang [3] reported crayfish as the second largest fishery in the marine/estuarine fisheries in the lower Cross River Basin. Crayfish is also reported to be generating about 20 million US dollars annually to the Nigerian economy [4]. Despite the benefits derived from crayfish harvesting, large percentage of the harvesters of this product still live in poverty especially women. They are also confronted with income distribution problems resulting in very low per capita income and declining food consumption.

However, both pre-harvest and post-harvest activities in this fishery profession apart from generating significant profits can also prove resilient to shocks and crises and make meaningful contributions to poverty alleviations and food security. In Nigeria, the poverty have become intractable problem by consistently being at the increasing level in the past two decades producing an unfavourable environment for economic growth, development and general well-being of humanity [5]. Moreover, one of the greatest challenges is to find solution to gender disparity on the issues of hunger and poverty among the citizenry. The term 'gender' is often used interchangeably with the term 'sex'. However, they are not the same; though whenever sex is assigned to a child, gender can be presumed. According to Gender spectrum [6], gender is the range of characteristics pertaining to, and differentiating between, masculinity and femininity. Gupta [7] considered gender as social and cultural construct that differentiates females from males and thus defines the ways in which females and males interact with each other. These roles and expectations are learned and they can change over time as well as vary within and between cultures. [8] viewed gender as a source of power (or powerlessness) in any society or culture. This is because as societies and cultures change, the power associated with gender also changes. The homogeneity of gender dynamics across social and cultural contexts points to a system of social structures and practices which privileges men over women. This system permits inequality between men and women and, in principle, usually allows men more control over significant aspects of women's lives, such as sexuality, reproduction, labour and accessibility to other resources [9,10]. This control is sanctioned through a vast array of social structures, institutions, norms and practices, including often gender-blind laws, policies and customs, and also various forms of violence.

Gender differences in poverty explain the effects of poverty on the society, culture and the economy based on the gender characteristics, roles and responsibilities set by that society or nation. There has not been a clear direction as to how poverty and gender are associated. While some studies have claimed that more women

seem to be affected by poverty than men, some other ones report the reverse. In Nigeria, it is on record that the scourge of poverty is more pronounced on the female gender than male [11]. Oghiagbephan [12] observed that Niger Delta region though endowed with many natural resources is characterized by poverty. This may be due to various economic, social, environmental and political factors operating within the region. Thus, improving the living condition of the citizenry through empowerment and closing gender gaps in poverty become imperative, not only because it improves the lives of women and tends to raise their relative status, but also because gender equality and equity in resources allocation mitigate poverty, improves general livelihood of the people and enhance economic development.

Surprisingly, In Nigeria women are responsible for about 70 percent of actual farm work and constitute up to 60 percent of the farming population [13]. Moreover, they do not have much control over their resources and are disadvantaged in terms of human and physical capital. In the fisheries sub sector, women represent nearly half of the estimated 180 million or more people worldwide working in fisheries, and its related occupation and aquaculture [14, 15,16]. In Niger Delta Region, women are found in almost all fisheries-related occupations such as crayfish, periwinkle, lobsters and other seafood harvesting, although their specific roles vary among and within states, communities and villages. In small-scale crayfish fishing, they are frequently found harvesting (especially in inland waters), gleaning or washing crayfish, but more often working on the shores or in their villages drying, salting or preserving crayfish and other seafood products. Even though women are involved in a variety of fishery activities, they have limited access to resources and have restricted decision-making power compared to their male counterparts. In Nigeria, Studies by British Council [17] and Oxfam International [18] among others have affirmed to it. This scenario has made women crayfish harvesters in the region to remain imprisoned in the cycle of poverty without means to enjoy a better quality life. Their desperation is often such that they are duped into sex industries both within the country and in abroad. This gender disparity and discrimination in wealth and power sharing; resource allocation and distribution make women to be less valued economically despite their contributions to economic development and general well-being of livelihood. However, [19] stated that unless action is taken to reverse this trend, inequalities and poverty will further deepen divides, stirring social unrest, undermining social progress and threatening political and economic stability. Therefore, there is a need to engage proactive measure in order to reverse this trend in the crayfish harvesting business.

Although, few empirical research works on gender differentials in poverty have been carried out among some crop, livestock and fish farmers in some States and Local Government Areas (LGAs) in Nigeria, but non to the best of the authors knowledge have been on artisanal crayfish harvesters and none of it were carried out in three State of Niger Delta region at a time. As a result, their studies were limited in geographic coverage, thereby casting doubts on their external validity. However, the use of Oaxaca-Blinder decomposition technique in decomposing poverty apart from identifying the socioeconomics and institutional factors contributing to poverty will also determine the extent each of the factors explained the gender differential gap on the issue. The findings of this study will enable the government to develop gender friendly policies that will benefit the crayfish fishery sub-sector while ensuring equal and equitable distribution of income among the crayfish harvesting household without gender bias. This will in turn create conducive atmosphere for more productivity of the product. In view of the above, it become imperious to undertake a careful empirical analysis and revisit our understanding of gender differentials in poverty among crayfish harvesters and their driving factors. The general purpose of this study is to examine the gender differentials in poverty among crayfish harvesting households in the Niger Delta region of Nigeria. The objectives of the study are to: (i) analyse the differences in poverty status of male and female headed crayfish harvesting households. (ii) explain and decompose the gender differences in poverty based on socioeconomic and institutional factors of the harvesters (iii) identify various poverty coping strategies adopted by the harvesters and the extent of their use.

2. METHODOLOGY

2.1 The Study Area

The study was conducted in selected State of Niger Delta Region. The Region consists of nine States (Abia, Akwa Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and Rivers) and 185 local governments. It is situated between latitude

3°00'N and 9°00'N and longitude 4°30'E and 7°20'E with land area of 75,000 km^2 [20,21]. The population of the Region stood at 31,244,587 distributed among the constituent States and projected to be 42,637,086 by 2016 [22] with temperature range of 21°C to 33°C [23] and mean annual rainfall varies from 4500 mm to 2000 mm. The region is very rich in crude oil and gas deposit. It has great area of forest reserves, ocean, high seas, rivers, lake, estuaries and creeks span across the region. It is found in the mangrove and rain forest tropical zone of the country. Three States were purposively selected for this study. They are Cross River, Akwa Ibom and Bayelsa State. The three states in the region were chosen because of their high level of crayfish harvesting activities and rich fishery potentials. The map of the study area is shown in Fig. 1.

2.2 Sampling Techniques and Sample Size

The study employed multi-stage and stratified random sampling techniques. Firstly, three States from the Niger Delta region where crayfish harvesting business are widely practiced was purposively selected. These are Akwa Ibom, Cross River and Bayelsa. Secondly, three Local Government Areas (LGAs) randomly selected among the crayfish harvesting LGAs from the selected States. Thirdly, four communities from each of the selected LGAs was randomly selected making a total of twelve (12) communities in each selected State. The fourth stage involved stratified random selection of 300 male and 109 female headed households from the sample frame using Yamane formula given as

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

Where,

n= sample size, N= finite population, e = limit of tolerable error, 1= unity.

2.3 Method of Data Collection

Primary data was used for this study. Data for this study were collected by the researchers and trained enumerators using structured questionnaire and interview schedule. Information was collected on household characteristics and other socio-economic variables of interest that were analyzed.

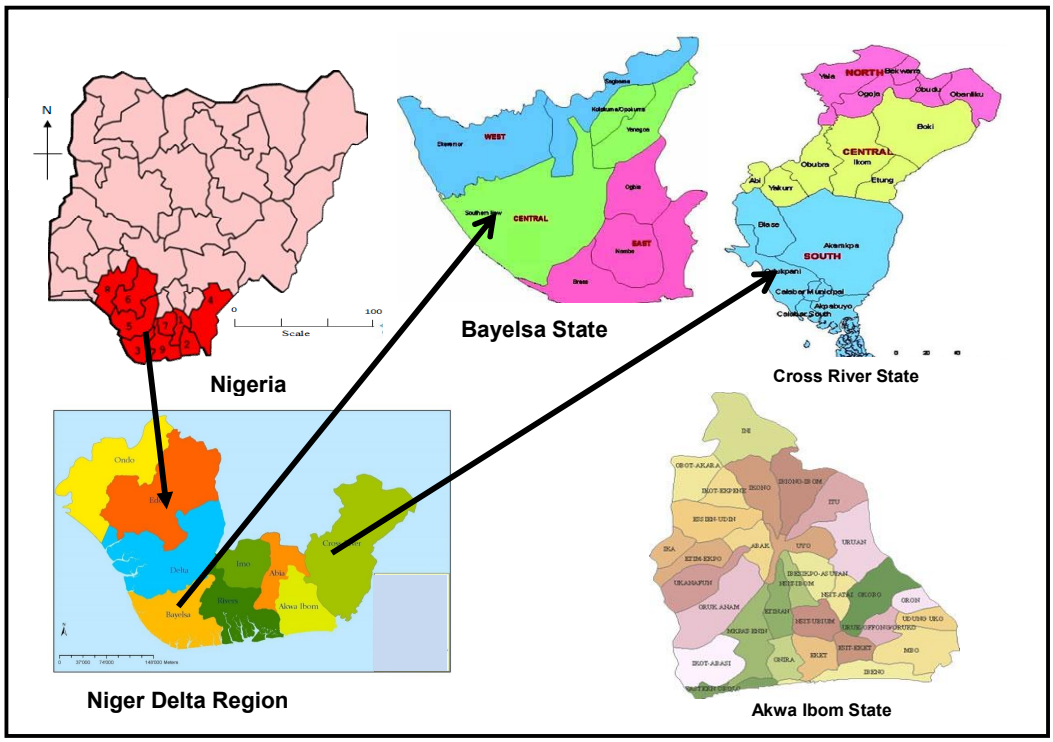

Fig. 1. Map of Nigeria showing the study area

2.4 Analytical Techniques

The data was analyzed using Foster Greer Thorbecke (FGT) model of poverty index and Oaxaca - Blinder decomposition technique.

2.4.1 Poverty status of male and female headed households

FGT model was used to analyse gender differences in poverty status of the respondents.

Model specification: The FGT poverty index as proposed by [24] is generally expressed as:

$$p_\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^\alpha \quad (2)$$

Where,

n = total number of households in population
q = the number of poor households
z = the poverty line for the household
y_i= per capita household income for i^{th} farmer
α = poverty aversion parameter and takes on value 0, 1, 2
$z-y_i$ = poverty gap of the i^{th} household; $\left(\frac{z-y_i}{z}\right)$ = poverty gap ratio

Following FGT model, household poverty can be decomposed into the following sub-units

When α = 0, then FGT index is expressed as:

$$p_o = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^o = \frac{q}{n} \quad (3)$$

This is call incidence of poverty or headcount index.

When α = 1, then FGT index is expressed as

$$p_1 = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^1 \quad (4)$$

This is called poverty depth or poverty gab index.

When α = 2, then FGT index is expressed as

$$p_2 = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^\alpha = \frac{1}{n} \sum_{i=1}^{q} \left(\frac{z-y_i}{z}\right)^2 \quad (5)$$

This is called poverty severity index which measures the squares of the poverty gaps relative to the poverty line. The index measures the severity of poverty which is the mean of square proportion of the poverty gap. When multiplied by 100, it gives the percentage by which a poor household's per capita income should increase to push them out of poverty.

Measurement of poverty line: This is done to separate crayfish harvesters into poor and non-poor groups. As a benchmark, 2/3 of the mean per capita income will be used as a threshold. Household whose mean per capita income fall below the poverty line are regarded as being poor while those with their per-capita income is on or above the bench-mark are non-poor.

Household per capita income (HPCI) = Household income / Household size (HHS) (6)

Total household per capita (THPCI) = Summarization of HPCI (7)

Mean total household per capita income (MTHPCI) = THPCI/n. where n = sample size

Then poverty Line (PL) = $\left(\frac{2}{3}\right)$ (MTHPCI) (8)

This model has been used by many researchers in determining and analysing poverty, some of which include [25,26].

2.4.2 Decomposition of poverty by gender

The decomposition was done using poverty incidence estimated in equation (3). Oaxaca – Blinder (OB) Decomposition Technique adopted and modified by Sinning et al. [27] was used for the decomposition.

Model specification: The Oaxaca –Blinder (OB) Decomposition Technique for poverty is expressed as:

$E(P_m) - E(P_f) = [E(X_m)-E(X_f)]\beta_f+E(X_f)(\beta_m-\beta_f)+[E(X_m)- E(X_f)](\beta_m- \beta_f) = E+C+CE$ (9)

Where,

$E(P_m) - E(P_f)$= mean differences in poverty between male and female headed household;

$E(X_m)- E(X_f)$= expected variable factors of male and female that contribute to differences in poverty

β_m and β_f = parameters of male and female to be estimated. The above equation can be written as: E +C + CE.

E is the part of the raw differential that is due to differences in endowments, C reflects the part

attributable to differences in coefficients, and CE represents the part that is due to the interaction between C and E.

The explained part of the differential will be decomposed simply by summing up the individual contributions that make up the total component. It is expressed as:

$$\hat{Q} = (\overline{X}_m - \overline{X}_f)\hat{\beta}_m = (\overline{X}_{1m} - \overline{X}_{1f})\hat{\beta}_{1m} + (\overline{X}_{2m} - \overline{X}_{2f})\hat{\beta}_{2m} + (\overline{X}_{3m} - \overline{X}_{3f})\hat{\beta}_{3m} + (\overline{X}_{4m} - \overline{X}_{4f})\hat{\beta}_{4m} + (\overline{X}_{5m} - \overline{X}_{5f})\hat{\beta}_{5m} + (\overline{X}_{6m} - \overline{X}_{6f})\hat{\beta}_{6m} + (\overline{X}_{7m} - \overline{X}_{7f})\hat{\beta}_{7m} + (\overline{X}_{8m} - \overline{X}_{8f})\hat{\beta}_{8m} + (\overline{X}_{9m} - \overline{X}_{9f})\hat{\beta}_{9m} + (\overline{X}_{10m} - \overline{X}_{10f})\hat{\beta}_{10m} + (\overline{X}_{11m} - \overline{X}_{11f})\hat{\beta}_{11m} + (\overline{X}_{12m} - \overline{X}_{12f})\hat{\beta}_{12m} + (\overline{X}_{13m} - \overline{X}_{13f})\hat{\beta}_{13m} + (\overline{X}_{14m} - \overline{X}_{14f})\hat{\beta}_{14m} + (\overline{X}_{15m} - \overline{X}_{15f})\hat{\beta}_{15m} \quad (10)$$

Where,

$\overline{X}_1, \overline{X}_2, \ldots, \overline{X}_{18}$ are the means of the single repressor or observable characteristics and $\hat{\beta}_1, \hat{\beta}_2, . \hat{\beta}_{18}$ are the associated coefficients. The first summand reflects the contribution of the group differences in $\overline{X}_1$, the second of differences in $\overline{X}_2$, and so on. Similarly, the individual contributions to the unexplained part are the summands in

$$\hat{U} = \overline{X}_f(\hat{\beta}_m - \hat{\beta}_f) = \overline{X}_{1f}(\hat{\beta}_{1m} - \hat{\beta}_{1f}) + \overline{X}_{2f}(\hat{\beta}_{2m} - \hat{\beta}_{2f}) + \overline{X}_{3f}(\hat{\beta}_{3m} - \hat{\beta}_{3f}) + \overline{X}_{4f}(\hat{\beta}_{4m} - \hat{\beta}_{4f}) + \overline{X}_{5f}(\hat{\beta}_{5m} - \hat{\beta}_{5f}) + \overline{X}_{6f}(\hat{\beta}_{6m} - \hat{\beta}_{6f}) + \overline{X}_{7f}(\hat{\beta}_{7m} - \hat{\beta}_{7f}) + \overline{X}_{8f}(\hat{\beta}_{8m} - \hat{\beta}_{8f}) + \overline{X}_{9f}(\hat{\beta}_{9m} - \hat{\beta}_{9f}) + \overline{X}_{10f}(\hat{\beta}_{10m} - \hat{\beta}_{10f}) + \overline{X}_{11f}(\hat{\beta}_{11m} - \hat{\beta}_{11f}) + \overline{X}_{12f}(\hat{\beta}_{12m} - \hat{\beta}_{12f}) + \overline{X}_{13f}(\hat{\beta}_{13m} - \hat{\beta}_{13f}) + \overline{X}_{14f}(\hat{\beta}_{14m} - \hat{\beta}_{14f}) + \overline{X}_{15f}(\hat{\beta}_{15m} - \hat{\beta}_{15f}) \quad (11)$$

Where,

$\overline{X}_1, \overline{X}_2, \ldots, \overline{X}_{18}$ are the means of the observable characteristics and $\hat{\beta}_1, \hat{\beta}_2, \ldots \hat{\beta}_{18}$ are the associated coefficients. These will be computed using Stata software.

For the decomposition of poverty, the study will consider the following explanatory variables:

P = Poverty incidence of crayfish harvesters (poor = 1, non-poor = 0)
X_1 = Age of the crayfish harvester (in years)
X_2 = Gender (dummy: male =1; female = 0)
X_3 = Educational level of the crayfish harvester (in years)
X_4 = Marital status (married =1; otherwise = 0)
X_5 = Household size (number of people in the household)
X_6= Experience of the harvester (in years)
X_7 = Amount of Credit accessed (in Naira)
X_8 = Membership of co-operative (member = 1; otherwise = 0)
X_9 = Labour (in man days)
X_{10} = Extension visit (number of times/year)
X_{11}= Income from crayfish harvesting (in Naira)
X_{12} = income from other sources (in Naira)
X_{13} = Access to Outboard Engine (access = 1; otherwise = 0)
X_{14} = Access to net (access = 1; otherwise = 0)
X_{15} = Access to safety kit (access =1; otherwise = 0)

All variables were subjected to correlation on analysis.

3. RESULTS AND DISCUSSION

3.1 Poverty Status of Male and Female Crayfish Harvesters

Poverty levels among crayfish harvesters in the region were analyzed using the three indicators of poverty as highlighted in the model. The indicators were: the incidence of poverty, poverty depth and severity of poverty. The poverty line was computed as 2/3 of the mean per capita income of crayfish harvesters in the study area. Result in Table 1 revealed that, the incidence of poverty in male and female respondents was 0.383 and 0.587 respectively. This means that about 38% of male crayfish harvesters and 59% of the female counterparts in the region are poor or have their per capita income less than the poverty line income. The result shows that, female harvesters are more vulnerable to poverty than their male counterparts in the region. This result corresponds with research performed by [28] on poverty and gender. However, it is on record that the scourge of poverty is more pronounced on the female gender than male in Nigeria [29,30,31]. This may be ascribed to effect of societal norms and power relations prohibiting women from equally accessing productive resources like the men and not given them, free access to areas where crayfish seem relatively abundance in harvesting water zone of the creeks, estuaries, rivers and seas. According to [32] norms and power relations that become institutionalised promote and legitimise the livelihood activities undertaken by resident women and men in the society. Other reasons are high level of household size, high rate of sea pirate activities (raping, robbing, kidnaping and assault), differences in harvesting experience, time of working hours and high level engagement of women in many other fishing activities such as processing, marketing and fetching of fire wood. However, the result disagree with [33] and [34].

Table 1. Poverty status of male and female crayfish harvesters

Poverty status	Male	Female	Pooled
Poverty incidence (Head count index)	0.383	0.587	0.396
Poverty depth (poverty gap index)	0.325	0.333	0.378
Poverty severity index	0.166	0.179	0.200
Poverty line	₦225850.52	₦181196.80	₦213950.14

Source: Computed from field survey data (2018)

who reported that male headed households in the region and the country respectively are likely to be poor than the female headed households . The head count index for the pooled data was 0.396. This means that about 40% of the crayfish harvesters' population in the study area are poor or have per capita income below the poverty line income. The implication here is that the existence of poverty in the region is at the increasing rate. This scenario is a threat to livelihood and general well-being of people in the area considering the poor environmental condition and skyrocketing high cost of living in the region. The findings is in consonance with the study of Nandi et al. [35] in Delta state who reported high poverty incidence for fish farmers in the State.

The result in Table 1 also revealed the poverty depths of 0.325 for male harvesters and 0.333 for females in the study area. This implies that, about 32.50% and 33.30% of per capita income is needed to bring poor male and female crayfish harvesters respectively from below poverty line up to the poverty line income in the study area. The pooled population poverty depth index stood at 0.378, implying that, about 37.8% of per capita income is required to push poor crayfish harvesters rooted below poverty up to the threshold poverty line income.

The poverty severity index was 0.166 for male harvesters and 0.179 for females in the study area as shown in Table 1. This result indicates that, male crayfish harvesters need about 16.60% increase in per capita income to push them away from severe poverty. Similarly, the female crayfish harvesters need about 17.90% increment in per capita income to escape from severe poverty. An average severe poverty index of 0.200 was discovered for the population. This predicts that, about 20.00% of per capita income is required to push crayfish harvesters trap by severe poverty away from it. This is in support of [36] findings among smallholders' farmers in South Eastern Nigeria and [37] findings among youth farmers in Akwa Ibom State. Conversely, the findings disagrees with [38,39,40] who reported farm and rural household males to be poorer than females in Ogun State, Oyo State and Nasarawa/Benue of Nigeria respectively. This may be due to regional, environmental, job and /or type of farm differences.

3.2 Decomposition of Gender Differences in Poverty

3.2.1 Determinants of poverty status across gender

Table 2 presents determinants estimate of gender poverty among crayfish harvesters under Oaxaca- blinder decomposition model. It shows the preliminary results of decomposition in order to understand the impact of gender differences in poverty among the crayfish harvesting household in the study area. The log likelihood ratio statistics as indicated by $\chi 2$ statistics of (86.89) for female, (90.81) for male and (170.15) for pooled data are highly significant at ($P < 0.0000$), suggesting the model has a strong explanatory power.

Data as presented in Table 2 revealed under pooled result that age, gender, marital status, household size, income of crayfish harvesting, and income of other sources are the major determinants of poverty in the study area. The coefficients of age, marital (both significant at 10%) and household size (significant at 1%) were positive with the regress and (i.e. the poor household is 1 and 0 otherwise) which implies that increase in the value of any of these variables may likely increase the probability of being poor. This also means that a unit increase in age, marital status and household size will result in 49.28%, 54.61% and 21.14% increases in poverty among the crayfish harvesters in the study area respectively. For instance, as the respondent is getting older, the likelihood of being poor is increasing. This can be justified base on the fact that elderly person decline in strength and productivity as he gets older as well as involves in health problems. They also have more responsibilities than the average aged people hence, the more the responsibilities the more the expenditures. Household size also increases the likelihood of being poor and this could be because of increase in household size directly or indirectly reduces income per-head

(per capita income), increases household expenses as well as impair standard of living of the households. On the other hand, gender, income from crayfish harvesting and income from other sources had negative coefficients and significantly influence the level of poverty in the study area by 1%. Thus, an increase in a unit value of any of these variables increases the likelihood of crayfish harvesters not being poor in the study area. This implies that a female respondent with increased level of income in crayfish harvesting and other income sources may likely be non-poor in the study area. This findings support the studies of [41] in Ondo State, [42] in South Eastern Nigeria, [43] in Kwara State and [44] in South South Nigeria.

However, education level, amount of credit obtained, membership of cooperative, access to outboard engine and access to crayfish harvesting net with exception of extension contact, were negatives and conformed to a priori expectation but were not significant. This implies that they are negatively related to poverty meaning they have affinity of increasing the probability of crayfish harvesters being non- poor in the study area. This result does not coincide with the findings of [45] and [46] but is consistent to the findings of [47] who reported that no significant effect on the poverty status is made by the level of education of the head of the household.

Table 2 also revealed under male data that age, marital status and household size were positive and significant at 10%, 5% and 1% level respectively while income of crayfish harvesting, income of other sources and constant term were negative and significant at 1%, 5% and 1% level of significance respectively. This implies that a unit increase in age, marital status and household size will increase the likelihood of male crayfish harvesters being poor while a unit increase in income from crayfish harvesting and income from other sources will tend to increase the likelihood of crayfish harvesters being non-poor. Similar to result of pooled data, education level, amount of credit obtained, membership of cooperative and access to outboard engine with exception of access to crayfish harvesting net were negative and conformed to a priori expectation.

In addition, data related to women (Table 2) shows that household size and labour has positive relationship with poverty status of the harvesters and were significant at 1% and 10% probability level. This indicates that as the unit of household size and labour increase among the crayfish headed harvesters, the probability of being poor increases. On the other hand, income from crayfish, income from other sources and access to harvesting net were negatives and significant at 1%, 10%, and 5% level of probability respectively. This also implies that they have negative relationship with poverty and as they increase, the probability of female headed crayfish harvesters being poor reduces.

Comparing the male and female result outcome, it shows that household size was positive and significant at 1% in both gender. But age and marital status were positive and significant at 10% and 5% level of probability for male crayfish harvesters while for females it is labour that was positive and significant at 5% level of probability apart from household size. This means that they were the major determinant factors of poverty inducement for their respected group in the study area. For instance, in term of male, as the harvester is getting older, the likelihood of being poor increases. This can be justified base on the fact that elderly male persons decline in strength, vigour and productivity faster than their female counterparts as they get older as well as involve in health problems. Hence, they always demand for more and better care than the females who will still be doing some menial job to take care of themselves. The males also involve more in polygamous marriage than females. This act of more wife lead to more children, more dependant, and more financial responsibility thus leading to reduction in per capita income of the male headed household. In term of the females, most of the female headed household are made up of singles, divorcees and widows. They make use of more labour (family and permanent) in order to complement absence of husband in their life thus increasing the burden of family care, maintenance and training of children. The constant term of the male respondents was positive and significant at 1% level of probability. This means that males contribute more to poverty in the area than the females. This findings support the studies of several authors [48,49,50].

Conversely, income of crayfish harvesting and income from other sources were negative and significant in both gender but the later was significant at 10% for females while that of males was at 5% level of probability. Access to crayfish harvesting net was also negative and significant at 5%. These denote that they were

Table 2. Determinants of gender poverty among crayfish harvesters

Variables	Female harvesters			Male harvesters			Pooled data		
	Coefficient	Std. error	z- value	Coefficient	Std. error	z- value	Coefficient	Std. error	z- value
Age (years)	-0.0651	0.1075	-0.60	0.0466	0.0394	1.51*	0.4928	0.0281	1.75*
Education level (years)	0.0181	0.1041	0.17	-0.0431	0.0446	-0.97	-0.0261	0.0386	-0.68
Marital status	-0.5671	0.7301	-0.78	0.8482	0.4090	2.07**	0.5461	0.3257	1.68*
Household size	0.3639	0.1162	3.13***	0.1988	0.0519	3.83***	0.2114	0.0430	4.92***
Experience (years)	0.0747	0.1029	0.73	0.0131	0.0330	0.40	0.0070	0.0295	0.24
Amount of credit obtained (₦)	-7.89e07	2.22e-06	-0.36	-3.04e-07	1.15e-06	-0.26	-6.07e-07	9.41e-07	-0.65
Mem. of cooperative (dummy)	-0.0545	0.8859	-0.06	-0.0959	0.3857	-0.25	-0.2129	0.3360	-0.63
Labour (man-days)	0.0615	0.0306	2.01**	-0.0033	0.0082	-0.40	-0.0009	0.0077	-0.11
Extension visits (days/ year)	-0.3072	0.6755	-0.45	0.3192	0.3136	1.02	0.2351	0.2686	0.88
Income of crayfish harvesting (₦)	-2.14e-06	4.88e-07	-4.38***	-1.02e-06	2.01e-07	-5.05***	-1.22e-06	1.77e-07	-6.91***
Income of other sources (₦)	-0.0001	7.57e-06	-1.58*	-5.58e-06	2.53e-06	-2.21**	-7.11e-06	2.33e-06	-3.05***
Access to outboard engine	0.9895	1.0096	0.98	-0.3514	0.4238	-0.83	-0.1412	0.3664	-0.39
Access to crayfish harvesting net	-2.4044	1.0144	-2.37**	0.0130	0.4196	0.03	-0.2748	0.3614	-0.76
Access to safety kit	1.3306	0.8809	1.51	0.0084	0.4070	0.02	0.1712	0.3455	0.50
Gender (male = 1, female = 0)	-	-	-	-	-	-	-2.0393	0.3809	-5.35***
Constant term	1.5273	2.2752	0.67	-2.7452	0.8787	-3.12***	-0.3708	0.7971	-0.47
Log likelihood	31.88			149.44			190.35		
LR chi2 (14) and (15) for pooled	86.89			90.81			170.15		
Prob > chi2	0.0000			0.0000			0.0000		
Pseudo R^2	0.5767			0.2330			0.3089		
No. of observation	109			300			409		

Source: Computed from field survey data (2018)

the major determinants of making the crayfish harvesters' non-poor in the study area. This findings is in agreement with [51,52] who reported that accesses to both fishing and non-fishing income are also important determinants of wellbeing in the study area. Other sources of income activities complement crayfish harvesting income by availing the household additional resources for both consumption and investment and investment in turn enhances asset accumulation and opens up additional escape routes out of poverty.

3.2.2 Decomposition of gender differences in poverty among crayfish harvesters

The logistic regression-based Oaxaca-Blinder decomposition method was used to analyse the sources of gender differentials gap in poverty between the male and female headed crayfish harvesters in the study area. From the preceding sections of logistic regression estimate of gender poverty determinants among crayfish harvesters, the empirical analyses have identified the existence of gender differentials gap in the study area under investigation. However, what is more relevant, particularly for policy makers, is to understand the reasons behind these gap so as to propose measures and interventions likely to reduce or even close the gap.

Table 3 provides the results of the threefold Oaxaca-Blinder decomposition of the gender differentials in poverty among the crayfish headed households. It summarizes the main findings by group of covariates (see Table 2). The first panel of the logistic regression-based O-B decomposition result as presented in Table 4.12 showed the mean gender poverty level predictions by groups and their differences. It shows that the mean poverty level for female and male crayfish harvesters was 0.5321 and 0.3533 resulting to a poverty gap of 0.1788. They were all significant at 1% level of probability. This finding is in line with [53] in Nigeria and [54] in central and northern part of Mozambique.

Furthermore, the second panel of the decomposition result is divided into three parts. The first part which is the crayfish harvesters' 'endowment' reflects the mean increase in poverty level of the female crayfish harvesters if they had the same endowment as the male harvesters. The second part quantifies the change in the females' poverty when applying the males' 'coefficients' to the current level of females' characteristics. The third part is the 'interaction' effect which measures the simultaneous effect of differences in the endowments and coefficients of the crayfish harvesters' characteristics. The threefold decomposition analysis reports gender differentials gap of -0.0963 (-53.86%) due to endowment, 0.2669 (149.27%) due to coefficients and 0.0082 (4.59%) due to interaction. Accordingly, the differences due to endowment effect (i.e. the proportion of the gender poverty differentials gap due to differences in the levels of observables or poverty determinants between male and female headed crayfish harvesters) was negative and significant at 5% probability while the differences due to coefficients (i.e. the portion of the gender differential attributable to the returns of the same observables or effect of poverty determinants) was positive and significant at 1% probability level. Consequently, the coefficients for interaction was positive but not significant. This means that female crayfish harvesters would benefit more from better endowments than their male counterparts while the males have a clear structural advantage when it comes to the returns of observable characteristics. This further implies that the gender differentials gap among the crayfish harvesters in the region is majorly cause by female structural disadvantage (coefficients effect) otherwise known as discriminations effect. As opined by [55] a positive coefficient widens the gender gap while a negative coefficient reduces the gender gap. This result agrees with [56] findings in the study of extending the approach of Oaxaca to explain the difference that there exist of being poor between Serbs and Albanian households in Kosovo. The result is also in line with [57] in the study of Gender productivity differentials among smallholder farmers in Africa: A cross-country comparison and [58] explaining gender differentials in agricultural production in Northern Nigeria but disagreed with the author in that of Southern Nigeria excluding the West whose report was otherwise.

The third panel which inferably is the last part of Table 3 provides the detailed decomposition of the 3 sources of gender differentials gap in poverty. Determining whether the poverty gap between the male and female crayfish harvesters is more depending on differences in the level of the determinants (covariates effects) or on differences in the effects of the determinants (coefficients effects) is crucial for designing the appropriate intervention measures and policies aim at reducing the gender differences . If the gender differentials gap is due to differences in

the effect of the determinants (structural effect), then the redistribution of endowments factors would not be sufficient to improve poverty level of the female crayfish harvesters, since the impact of the endowment factors are weaker among the female respondents. Gender mainstreaming and awareness programmes would be necessary interventions to close the gap between the two genders. However, if the gender differentials gap in poverty is due to differences in the level of the determinants (characteristics effect), then redistribution of endowments factors and improvement in the level of the determinants among the female crayfish harvesters would be an effective policy to reduce gender poverty differences.

In this study as shown in Table 3, the endowments effect is mostly explained by differences in household size, income of crayfish harvesting and marital status of the respondents. Household size is positive and significant at 1% while income of crayfish harvesting and marital status are negative and significant at 1% and 5% probability level respectively. This implies that the magnitude of household size tend to be more effective on the male headed crayfish harvesters while the magnitude of income of crayfish harvesting and marital status are more effectives among the female headed crayfish harvesters in the study area. The negative endowment effect therefore suggests that policies targeted at improving women's endowments in both income of crayfish harvesting and marital status, and improvement on female respondents' poverty determinants might be more effective in addressing the observed gender differences in poverty.

Similar to endowment effect, the sources of the structural effect vary across genders. The use and intensity of labour as a whole appear to be more effective on male headed crayfish harvesters in the region, it is positive and significant at 5% level of probability whereas income of crayfish harvesting, access to crayfish harvesting net and marital status strongly affect the magnitude of the structural effect on female headed crayfish harvesters in the study area. They carry negative sign and were significant at 5%, 5% and 10% level of probability respectively. The constant term of the structural effect was positive and significant at 10% probability. This implies that male respondents benefit more from return to observable characteristics than the female counterparts. This may be due to female restrictions in resource use, traditional practice of norms and custom, cultural barriers, belief and local laws operating in the region, under value of women potentials and contributions in crayfish harvesting business, general marginalization and bias against women ideology.

In the interaction effect, none of the variables were significant. However, the magnitude of most number of the variables carry negative sign which signifies that effective redistribution and use of the variables would have been beneficial to women in reducing poverty incidence among them in the region. Finally, looking at the detailed decomposition, it becomes clear that the main reason why females have higher poverty incidence is due to coefficients effect of the constant term. Even though females have better characteristics which can lower poverty incidence, and enjoy stronger poverty alleviating effect of these characteristics relative to males, there is huge baseline gap in poverty incidence between the two gender groups, captured by the coefficients effect of the constant term. Hence, for poverty incidence to be mitigated in the region and gender poverty gaps reduced among the crayfish harvesters, policy formulation and intervention programmes should be gear toward gender integration, giving women free access to resources and opportunities and inclusion of women in policy formulation, implementation and effective monitoring of programmes meant for their welfare become relevant. This findings is in support of [59,60].

3.3 Poverty Coping Strategies Based on Frequency of Use

The ranking of poverty coping strategies was done by using a four point scale to score the responses of the respondents and the scores are 4, 3, 2 and 1 which indicates frequently used, occasionally used, rarely used and never used respectively. Table 4 indicated that spending saved income (8.21%), intensify the amount of work done on the crayfish fishing to increase output (8.15%), children eating first (8.06), purchasing items on credit (7.99%), reduction in food consumption (7.26%), diversify off-fishing activities to increase income (7.25%), borrowing money for the household upkeep (7.22%), eating less preferred food (6.82%), reduction in the number of meals taken per day i.e. skipping of meals (6.78%), rely less on expensive cloths (6.64%) and reduction in food diversification (6.62%) were the top eleven (11) poverty coping strategies widely adopted by the majority of male headed crayfish harvesters (as shown by the percentage of household that used them) in the study area.

Table 3. Decomposition of gender differentials in poverty among crayfish harvesters

Gender differentials									
Category	**Coefficient**	**Std. error**	**Z value**						
Female	0.5321	0.0438	12.15***						
Male	0.3533	0.0281	12.57***						
Differentials gap	0.1788	0.0521	3.43***						
Aggregate decomposition									
	Endowments effect (E)			**Coefficients effect (C)**			**Interaction effect (CE)**		
	Coefficient	**Std. error**	**Z value**	**Coefficient**	**Std. error**	**Z value**	**Coefficient**	**Std. error**	**Z value**
Total	-0.0963	0.0390	-2.47**	0.2669	0.0613	4.35***	0.0082	0.0569	0.14
% share of differentials gap	-53.86%			149.27%			4.59%		
Detailed decomposition									
Variables	**Coefficient**	**Std. error**	**Z value**	**Coefficient**	**Std. error**	**Z value**	**Coefficient**	**Std. error**	**Z value**
Age (years)	-0.0143	0.0112	-1.28	-0.6351	0.6070	-1.05	0.0092	0.0516	0.18
Education level (years)	-0.0054	0.0058	-0.92	0.0433	0.0810	0.53	0.0020	0.0118	0.17
Marital status	-0.0455	0.0222	-2.05**	-0.1601	0.0988	-1.62*	0.0203	0.1126	0.18
Household size	0.0333	0.0134	2.48***	0.1278	0.0913	1.40	0.0074	0.0420	0.18
Experience (years)	-0.0035	0.0091	-0.39	0.1850	0.3160	0.59	-0.0044	0.0258	-0.17
Amount of credit obtained (₦)	-0.0004	0.0016	-0.24	-0.0021	0.0109	-0.19	-0.0002	0.0012	-0.14
Membership of cooperative (dummy)	-0.0013	0.0052	-0.25	0.0011	0.0249	0.04	0.0015	0.0038	0.04
Labour (man-days)	0.0011	0.0027	0.39	0.3911	0.1719	2.28**	-0.0055	0.0301	-0.18
Extension visits (days per year)	0.0028	0.0035	0.79	-0.0230	0.0269	-0.86	-0.0015	0.0080	-0.18
Income of crayfish harvesting (₦)	-0.0623	0.0204	-3.06***	-0.2289	0.1069	-2.14**	-0.0183	0.0945	-0.19
Income of other sources (₦)	-0.0005	0.0044	-0.12	-0.0410	0.0520	-0.80	-0.0002	0.0016	-0.10
Access to outboard engine	-0.0005	0.0020	-0.25	0.0365	0.0292	1.25	0.0005	0.0034	0.15
Access to crayfish harvesting net	0.0001	0.0033	0.03	-0.0692	0.0300	-2.30**	-0.0050	0.0263	-0.19
Access to safety kit	0.0001	0.0044	0.02	0.2966	0.0215	1.38	0.0038	0.0209	0.18
Constant				0.6118	0.3406	1.80*			

Source: Computed from field survey data (2018)

Table 4. Poverty coping strategies based on frequency of use by crayfish harvesters

Category	Coping strategies	Frequently used (4)	Occasionally used (3)	Rarely used (2)	Not used (1)	PCSUI	% of household	Rank
Male	Reduction in food consumption	122	123	51	4	963	7.26	5
	Eating less preferred food	69	168	62	1	905	6.82	8
	Reduction in food diversification	75	135	83	7	878	6.62	11
	Children eating first	191	90	16	3	1069	8.06	3
	Reduction in the number of meals taken per day i.e. Skipping of meals	76	149	73	2	899	6.78	9
	Selling of assets to increase income	37	105	111	47	732	5.19	13
	Spending of saved income	219	55	22	4	1089	8.21	1
	Rely less on expensive cloths	52	190	45	13	881	6.64	10
	Purchasing items on credit	188	91	14	7	1060	7.99	4
	Borrowing money for the household upkeep	120	123	52	5	958	7.22	7
	Diversify off-fishing activities to increase income	141	92	54	3	961	7.25	6
	Intensifying the amount of work done on the crayfish fishing to increase output	198	86	15	1	1081	8.15	2
	Reliance on help from relatives and friends.	33	116	119	32	750	5.66	12
	Allocating children to friends and relatives	16	56	116	112	576	4.34	14
	Relocating to other places	1	26	106	167	461	3.48	15
	Total					**13263**	**100**	
Female	Reduction in food consumption	38	46	24	1	339	7.02	7
	Eating less preferred food	28	54	26	1	327	6.77	9
	Reduction in food diversification	40	43	20	6	335	6.94	8
	Children eating first	84	21	3	1	406	8.41	1
	Reduction in the number of meals taken per day i.e. Skipping of meals	25	52	30	2	318	6.58	10
	Selling of assets to increase income	18	34	37	20	268	5.55	13
	Spending of saved income	74	26	4	5	387	8.01	3
	Rely less on expensive cloths	16	66	17	10	306	6.34	11
	Purchasing items on credit	64	36	8	1	381	7.89	4
	Borrowing money for the household upkeep	36	55	18	1	346	7.16	6
	Diversify off-fishing activities to increase income	74	29	6	1	396	8.20	2
	Intensifying the amount of work done on the crayfish fishing to increase output	56	42	10	1	372	7.70	5
	Reliance on help from relatives and friends.	13	48	38	10	282	5.84	12
	Allocating children to friends and relatives	9	17	43	40	213	4.41	14
	Relocating to other places	1	10	24	74	156	3.23	15

Category	Coping strategies	Frequently used (4)	Occasionally used (3)	Rarely used (2)	Not used (1)	PCSUI	% of household	Rank
	Total					**4830**	**100**	
Pooled	Reduction in food consumption	160	169	75	5	1302	7.20	6
	Eating less preferred food	97	222	88	2	1232	6.81	7
	Reduction in food diversification	115	178	103	13	1213	6.70	9
	Children eating first	275	111	19	4	1475	8.15	2
	Reduction in the number of meals taken per day i.e. Skipping of meals	101	201	103	4	1217	6.73	8
	Selling of assets to increase income	55	139	148	67	1000	5.53	12
	Spending of saved income	293	81	26	9	1476	8.16	1
	Rely less on expensive cloths	68	256	62	23	1187	6.56	10
	Purchasing items on credit	252	127	22	8	1441	7.96	4
	Borrowing money for the household upkeep	156	178	70	5	1303	7.20	6
	Diversify off-fishing activities to increase income	215	121	60	13	1356	7.50	5
	Intensifying the amount of work done on the crayfish fishing to increase output	254	128	26	1	1453	8.03	3
	Reliance on help from relatives and friends.	46	164	157	42	1032	5.70	11
	Allocating children to friends and relatives	25	73	159	152	789	4.36	13
	Relocating to other places	2	36	130	241	617	3.41	14
	Total					**18093**	**100**	

Source: Computed from field survey data (2018)

The female result lead with children eating first (8.41%), follow by diversify off-fishing activities to increase income (8.20), spending of saved income (8.01%), purchasing items on credit (7.89%), intensify the amount of work done on the crayfish fishing to increase output (7.70%), borrowing money for household upkeep (7.16%), reduction in food consumption (7.02%), reduction in food diversification (6.94%), eating less preferred food (6.77%), reduction in the number of meals taken per day i.e. Skipping of meals (6.58%) and rely less on expensive cloths (6.34%) as the most 11widely used poverty coping strategies.

Table 4 also revealed that spending of saved income (8.16%), children eating first (8.15%), intensify the amount of work done on the crayfish fishing to increase output (8.03), purchasing items on credit (7.98%), diversify off-fishing activities to increase income (7.50%), borrowing money for household upkeep (7.20%), reduction in food consumption (7.20%), eating less preferred food (6.81%), reduction in the number of meals taken per day i.e. skipping of meals (6.73%), reduction in food diversification (6.70%), and rely less on expensive cloths (6.56%) were the poverty coping strategies used by the majority of crayfish harvesters in the region.

Looking at the result generally, it could be observed that majority of the respondents in the study area used about eleven (11) poverty coping strategies rampantly out of the fifteen (15) employed. Though there is slide variation in position ranking of the strategies between the three data categories (male, female and pooled). However, spending of the saved income came first in male and in pooled result while in female, it was 'children eating first'. This may be deduce from the fact that men are the breadwinners of the family which implies that in the midst of uncertainties or shock triggered by poverty, they have to removed their saved income and spend for the family so as to maintain their integrity. In the other hand, women are very close to their children and they have more affection to them than their men counterpart. Hence, in the midst of poverty and hunger, they prefer their children to eat to satisfaction before themselves as they regard children as their pride. This result is in line with the findings of [61,62,63]. The least poverty coping strategy adopted in the region is relocating to other place which has a percentage of 3.48, 3.23 and 3.41 for male, female and pooled respectively.

4. CONCLUSION

Gender differentials in poverty has become serious issues in global perspective as a result of it effects in productivity, economic growth, community development and general wellbeing of humanity. This have created a gap between one gender and another. The gap which refuses to close even in the developed countries has led to the life of one gender, especially women, to be affected by a countless of discriminatory traditional and socio-cultural practices that put them at disadvantage in a number of areas compared to men. However, to reduce this gap and achieve gender parity there is need for women to be given unrestricted access to productive tools in the crayfish harvesting business, be made to have fair share in the family resources, involve in policies making and implementation on issues concerning their profession and be given power to make decision in the sector.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Etim EJ, Baba KM, Ojo MA, Ndanitsa MA. Review on gender differentials in income inequality, poverty and food security among crayfish harvesting households in Niger Delta Region, Nigeria. Proceedings of 53 rd Annual Conference of Agricultural Society of Nigeria (ASN) held on 21st to 25th October 2019 at National Cereals Research Institute, Badeggi, Niger State, Nigeria. 2019;365–369.
2. Zabbey N, Erondu ES, Harts AI. Nigeria and the prospect of shrimp farming; critical issues. Livestock research for rural development. 2010;22(11):34-47.
3. Ele IE, Nkang MO. Analysis of production determinants and technical efficiency in crayfish production in the lower Cross River Basin, Nigeria. Journal of Research in Humanities and Social Science. 2014; 2(11):30-36.
   Available:http://www.questjournals.org/jrhss/papers/vol2-issue11/D2113036.pdf
4. Etim L, Belhabib D, Pauly D. An overview of the Nigerian marine fisheries and a re-evaluation of its catch data for the years

1950 to 2010. Fisheries Centre, the University of British Columbia Working Paper Series, Working Paper. 2015;1-68.

5. Etim EJ, Baba KM, Ojo MA, Ndanitsa MA. Review on gender differentials in income inequality, poverty and food security among crayfish harvesting households in Niger Delta Region, Nigeria. Proceedings of 53rd Annual Conference of Agricultural Society of Nigeria (ASN) held on 21st to 25th October 2019 at National Cereals Research Institute, Badeggi, Niger State, Nigeria. 2019;365–369.
6. Genderspectrum. Understanding Gender; 2017.
   Available:https://www.genderspectrum.org/quick-links/understanding-gender /
7. Gupta GR. Gender, sexuality, and HIV/AIDS: The what, the why, and the how. Can HIV AIDS Policy Law Rev. 2000; 5(4):86-93.
8. FAO Towards gender-equitable small-scale fisheries governance and development. A handbook. In support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, by Nilanjana Biswas, Rome, Italy; 2017.
9. Nayak N. The political economy of violence against women with special reference to the fisheries sector. Paper presented at the SANGAT Workshop, Goa, India; 2007.
10. FAO. Towards gender-equitable small-scale fisheries governance and development. A handbook. In support of the implementation of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication, by Nilanjana Biswas, Rome, Italy; 2017.
11. Awotide BA, Awoyemi TT, Oluwatayo IB. Gender analysis of income inequality and poverty among rural households in Nigeria: evidence from Akinyele Local Government Area, Oyo State. Journal of Biology, Agriculture and Healthcare. 2015;5(3):20–27.
12. Oghiagbephan AD. Poverty reduction and sustainable development in Niger Delta Region of Nigeria strategies for counseling. Journal of Applied Management Science. 2016;2(5):71-86.
13. Ajani OIY. Gender dimensions of agriculture, poverty, nutrition, and food security in Nigeria. IFPRI Nigeria Strategy Support Program Brief 5. Washington, D.C.: International Food Policy Research Institute.]; 2008.
    Available:http://www.ifpri-nigeria@cgiar.org
14. FAO Good practice policies to eliminate gender inequalities in fish value chains. FAO. Rome; 2013.
15. World Bank, FAO, World Fish Center. Hidden harvest - the global contribution of capture fisheries. Open Knowledge Repository. 2012;92.
16. Lenthisco A, Lee RU. A review of women's access to fish in small-scale fisheries. FAO Fisheries and Aquaculture Circular. Food and Agriculture Organization of the United Nations, Rome; 2015.
17. British Council. Gender in Nigeria report: improving the lives of girls and women in Nigeria, 2nd edition, British council, Nigeria; 2012.
    Available:http//www.britishcouncil.org.ng/gender
18. Oxfam International. Inequality in Nigeria: Exploring the Driver; 2017.
19. UN/HLCP (United Nations High-level Committee on Programmes). UN System framework for action on equality; 2017.
    Available:http://www.unsystem.org/content/ef
20. UNDP (United Nations Development Programme). Niger Delta Human Development Report, UN House, Garki, Abuja, Nigeria; 2006.
    Available:http://www.bebor.org/wp-content/uploads/2012/09/UNDP-Niger-Delta-Human-Development-Report
21. Omuta GED. Poverty and environmental quality in the Niger Delta Region: Dependence on biomass fuels as the source of household energy. CPED Monograph Series. Sponsored by the Centre for Population and Environmental Development (CPED) and the International Development and Research Centre (IDRC), Benin City, Nigeria. 2011;1-106.
22. NPC (National Population Commission). Nigeria National Census Report; 2006.
23. Omuta GED. Poverty and environmental quality in the Niger Delta Region:

Dependence on biomass fuels as the source of household energy. CPED Monograph Series 2011. Sponsored by the Centre for Population and Environmental Development (CPED) and the International Development and Research Centre (IDRC), Benin City, Nigeria. 2011;1-106.

24. Foster J, Greer J, Thorbecke E. A class of decomposable poverty measures. Econometrica. 1984;52:761–765.
25. Adetayo AO. Analysis of farm households poverty status in Ogun states, Nigeria. Asian Economic and Financial Review. 2014;4(3):325-340.
26. Akpan SB, Patrick IV, Amama A. Level of income inequalities and determination of poverty incidence among youth farmer in Akwa Ibom state, Nigeria. Journal of Sustainable Development. 2016;9(5):162-174.
27. Sinning M, Hahn M, Bauer TK. The Blinder–Oaxaca decomposition for nonlinear regression models. The Stata Journal. 2008;8(4)480–492.
28. Anyanwu JC. Poverty in Nigeria: A Gendered Analysis, Journal Statistique Africain Numero. 2010;39-40.
29. Ukoha OO, Etim NA. Analysis of poverty profile of rural households: Evidence from South-South Nigeria. Journal of Agriculture and Social Sciences. 2010;6(3):48-52.
30. Edet GE, Etim NA. Poverty and gender inequality in asset ownership among households in Southern Nigeria. Journal of Studies in Social Sciences. 2014a;7(1): 82-95.
31. Edet GE, Etim NA. Factors Influencing severe poverty of Coastal Communities in Southern Nigeria. British Journal of Applied Science and Technology. 2014b; 4(13):1966–1977.
32. Rajaratnam S, Cole SM, Longley C, Kruijssen F, Sarapur S. Gender inequalities in access to and benefits derived from the natural fishery in the Barotse Floodplain, Zambia, Southern Africa. In Gender in Aquaculture and Fisheries: The Long Journey to Equality. Asian Fisheries Science Special Issue. 2016;(29S):49-71.
33. Edoumiekumo SG, Karimo TM, Tombofa SS. Determinants of households' income poverty in the South-South geopolitical zone of Nigeria. Journal of Studies in Social Sciences. 2014;9(1):101-115.
34. Ajewole OO, Ojehomon VET, Ayinde OE, Agboh-Noameshie AR, Diagne A. Gender analysis of poverty among rice farming household in Nigeria rice hub. Paper presented at the 5th International Conference of the African Association of Agricultural Economists (AAAE), Addis Ababa, Ethiopia; 2016.
35. Nandi JA, Gunn P, Adegboye GA, Barnabas TM. Assessment of fish farmers' livelihood and poverty status in Delta State, Nigeria. Agriculture, Forestry and Fisheries. 2014;3(5):427-433.
Available:www.sciencepublishinggroup.com/j/aff
36. Oluwatayo IB. Gender dimensions of poverty and coping options among smallholder farmers in Eastern Nigeria. Mediterranean Journal of Social Sciences. 2014;5:27-31.
37. Akpan SB, Patrick IV, Amama A. Level of income inequalities and determination of poverty incidence among youth farmer in Akwa Ibom state, Nigeria. Journal of Sustainable Development. 2016;9(5):162-174.
38. Adetayo AO. Analysis of farm households poverty status in Ogun States, Nigeria. Asian Economic and Financial Review. 2014;4(3):325-340.
39. Awotide BA, Awoyemi TT, Oluwatayo IB. Gender analysis of income inequality and poverty among rural households in Nigeria: evidence from Akinyele Local Government Area, Oyo State. Journal of Biology, Agriculture and Healthcare. 2015;5(3):20–27.
40. Ajewole OO, Ojehomon VET, Ayinde OE, Agboh-Noameshie AR, Diagne A. Gender analysis of poverty among rice farming household in Nigeria rice hub. Paper presented at the 5th International Conference of the African Association of Agricultural Economists (AAAE), Addis Ababa, Ethiopia; 2016.
41. Igbalajobi O, Fatuase AI, Ajibefun I. Determinants of poverty incidence among rural farmers in Ondo State, Nigeria. American Journal of Rural Development. 2013;1(5):131-137.
42. Oluwatayo IB. Gender dimensions of poverty and coping options among smallholder farmers in Eastern Nigeria.

Mediterranean Journal of Social Sciences. 2014;5:27-31.

43. Oladimeji YU, Abdulsalam Z, Damisa MA, Omokore DF. Determinants of poverty among rural artisanal fishery households in Kwara State, Nigeria. Journal of Sustainable Development in Africa. Clarion University of Pennsylvania, Clarion, Pennsylvania. 2014;16(3).
[ISSN: 1520-5509]
44. Edoumiekumo SG, Karimo TM, Tombofa SS. Determinants of Households' income poverty in the South-South geopolitical zone of Nigeria. Journal of Studies in Social Sciences. 2014;9(1):101-115.
45. Achia TN, Wangombe A, Khadioli. A logistic regression model to identify key determinants of poverty using demographic and healthy survey data. European Journal of Social Sciences. 2010;13(1):38-45.
46. Etuk E, Angba C, Angba A. Determinants of poverty status of fish vendor households in lower Cross River Basin, Nigeria. Journal of Economics and Sustainable Development. 2015;6(14).
[ISSN: 2222-1700]
Available: www.iiste.org
47. Sekhampu TJ. Determinants of poverty in a South African township. Journal of Social Science. 2013;34(2):145-153.
48. Ajani OIY. Gender dimensions of agriculture, poverty, nutrition, and food security in Nigeria. IFPRI Nigeria Strategy Support Program Brief. Washington, D.C.: International Food Policy Research Institute; 2008.
Available:http://www.ifpri-nigeria@cgiar.org
49. Edoumiekumo SG, Karimo TM, Tombofa SS. Determinants of households' income poverty in the South-South geopolitical zone of Nigeria. Journal of Studies in Social Sciences. 2014;9(1):101-115.
50. Shetimma BG, Mohammed ST, Ghide AA Zindam PL. Analysis of socioeconomic factors affecting artisanal fishermen around Lake Alau, Jere Local Government Area of Borno State, Nigeria. Nigerian Journal of Fisheries and Aquaculture. 2014;2(1):48–53.
51. Shetimma BG, Mohammed ST, Ghide AA Zindam PL. Analysis of Socioeconomic factors affecting artisanal fishermen around Lake Alau, Jere Local Government Area of Borno State, Nigeria. Nigerian Journal of Fisheries and Aquaculture. 2014;2(1):48–53.
52. Oladimeji YU, Abdulsalam Z, Damisa MA, Omokore DF. Determinants of poverty among Rural artisanal fishery households in Kwara State, Nigeria. Journal of Sustainable Development in Africa. Clarion University of Pennsylvania, Clarion, Pennsylvania. 2014;16(3).
[ISSN: 1520-5509]
53. Mukasa AN, Salami AO. Gender productivity differentials among smallholder farmers in Africa: A cross-country comparison. Working Paper No. 231 of African Development Bank Group of Statistics. 2015;406-409.
54. Morgado J, Salvucci V. Gender divide in agricultural productivity in Mozambique. WIDER Working Paper 2016/176. UNU-WIDER. United Nations University World Institute for Development Economics Research, Helsinki, Finland; 2016.
55. Oseni G, Corral P, Goldstein M, Winters P. Explaining gender differentials in agricultural production in Nigeria. Agricultural Economics. 2014;46(3):285-310.
56. Lubrano M. Poverty and inequality using econometric model. The Econometrics of Inequality and Poverty. 2016;1(3):12-19.
57. Mukasa AN, Salami AO. Gender productivity differentials among smallholder farmers in Africa: A cross-country comparison. Working Paper No. 231 of African Development Bank Group of Statistics. 2015;406-409.
58. Oseni G, Corral P, Goldstein M, Winters P. Explaining gender differentials in agricultural production in Nigeria. Agricultural Economics. 2014;46(3):285-310.
59. Mukasa AN, Salami AO. Gender productivity differentials among smallholder farmers in Africa: A cross-country comparison. Working Paper No. 231 of African Development Bank Group of Statistics. 2015;406-409.
60. Lubrano M. Poverty and inequality using econometric model. The Econometrics of Inequality and Poverty. 2016;1(3):12-19.
61. Ibrahim H, Umar HS. Determinants of poverty among farming households in Nasarawa State, Nigeria. Production

Agriculture and Technology (PAT). 2008; 4(1):11–21.

62. Igbalajobi O, Fatuase AI, Ajibefun I. Determinants of poverty incidence among rural farmers in Ondo State, Nigeria. American Journal of Rural Development. 2013;1(5):131-137.

63. Akeweta NJ, Ndaghu AA, Kefas PD. Livelihood as poverty coping strategy of rural women in song Local Government Area, Adamawa State. International Journal of Agriculture Innovations and Research. 2014;3(1):190–197.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/57401