IJAERD E-Journal
International Journal of Agricultural Economics and Rural Development - 13 (1): 2023

Determinants of income disparity among oil palm processors in Southwest Nigeria: Gender perspective

Bankole, A. S., Garba, I. D., Okere, R. A. and Omofonmwan, E. I.
Agricultural Economics Division, Nigerian Institute for Oil Palm Research (NIFOR), PMB-1030, Benin City, Edo State.
Correspondence details: ajsbankole@gmail.com; 08058284947

Abstract: The study focused on the gender perspective of determinants of income disparity among oil palm processors in the study area. The primary data were collected with the aid of a structured questionnaire. A multistage sampling technique was used to select 320 (160 males and 160 females) oil palm processors. Data collected were analysed using descriptive statistics, Ordinary Least Square Regression, Gini-Coefficient and the Regression-Based Inequality Decomposition Index. The result showed that the income disparity within the male processors is 0.72% while within the female processors is 0.67. There was more income disparity among male processors than their female counterparts. The OLS result showed that age, education, extension services, years of experience, access to credit and adoption of technology significantly influence the income of female respondents while age, extension services and years of experience significantly influence income of male respondents. The result of socio-economics factors that contribute to income inequality revealed that education and family size will reduce income inequality among the female while adoption of technology will reduce inequality among the male respondents. Age, extension services, marital status, experience, access to credit, technology adoption and land acquisition will increase inequality among the female respondents while age, extension services, marital status, experience, access to credit, education family size and land acquisition will increase income inequality among the male respondents. Policy makers should formulate policies that will ensure reduction in the level of income inequality among male oil palm processors in order to improve the welfare status of the oil palm processors.
Keywords: Income, disparity, gender, processors, oil palm

INTRODUCTION

Agriculture has been a veritable tool for sustainable growth and development. It occupies the central place in the economy of Nigeria, providing the main livelihood source for most Nigerians. Agriculture provides 80 percent of the total food with 33 percent of the country's land under cultivation (Adepoju and Obayelu, 2013; Megan, 2022). The final goal of agricultural plans and production in national development is to enhance and increase the citizens' standard of living in relation to average income distribution and income equality (Addison and Cornia, 2001).

Oil palm processing, irrespective of the level (large or small scale) is a major source of income and employment for a large proportion of the poor rural population in Nigeria, (Olagunju, 2008). Oil palm *processing* is a fundamental and significant strategy for agricultural and industry-led growth for poverty reduction because of its potential to provide income for many rural households (Osei-Amponsah *et al.,* 2012). This contributes to Nigeria's GDP and agricultural sector and enhances economic growth. However, growth may not be enough without giving attention to income disparity and eliminating barriers that prevent the poor to benefit from a growing economy and to contribute to that growth (Iwayemi *et al*, 2000). Saira and Ather (2016) opined that during high periods of growth, the emergence of high levels of income inequality decreased the growth momentum and reduced the poverty-decreasing effect of the growth.

On the other hand, periods of low growth were marked by undue increase in poverty due to income inequality. According to Winkelmann and Winkelmann (2010), income inequality harms both individual and farmers' welfare. One of the main problems confronting countries' development and sustainable growth is income inequality **(**Korawit, 2012).

Furthermore, income inequality does not bring growth but is associated with economic instability. Despite the enormous potential associated with oil palm processing, income disparity has been the main obstacle affecting the productivity and welfare of oil palm processors in Nigeria, a source of concern. In addition, in the world today, regardless of socioeconomic class and status, there are systematic gender differences in material, well-being and income inequality (Etim *et al.,* 2020). Thus, this study is designed to fill this information gap by examining gender perspective of determinants of income disparity among oil palm processors in Southwest, Nigeria**.** Specifically, the study measures income disparity between the male and female, examines the factors influencing the income and identifies some socio-economic determinants of income disparity between the male and female oil palm processors.

METHODOLOGY

This study was carried out in Southwestern Zone of Nigeria, which lies between latitude 6^{o} to the North and 4^{o} to the South. It is marked by longitude 4^{o} to the West and 6^{0} to the East. It covers a land area of about 114,271 square kilometres, representing 12% of the country's land mass. The total population is about 27,581,992 and more than 96% of the population is Yoruba (NPC, 2006). The Zone comprises six (6) States: Oyo, Osun, Ogun, Ondo,

Ekiti and Lagos. It is bounded in the North by Kogi and Kwara states, in the East by Edo and Delta states, in the South by the Atlantic Ocean and in the West by the Republic of Benin. The climate is tropical and characterized by bi-modal rainfall pattern. The raining season, commonly called the cropping season, starts in late March and ends in October every year. The mean annual rainfall ranges from 800 mm in the derived savannah zone to 1500mm in the rainforest zone, while the mean annual temperature varies from 21.1°C to 31.1°C. The vegetation is mostly rainforest. Agriculture is the main occupation of the people and the notable food crops cultivated annually include cassava, maize, cowpea, rice, sorghum, millet, yam, and banana, while the cash crops are cocoa, oil palm, rubber, coffee, Kolanut among others.

Primary data was used for this study. The primary data was collected using well-structured questionnaire to obtain information from the oil palm processors. The study adopts a multi-stage sampling procedure. The first stage involved a purposive selection of Ondo and Ekiti States out of the six States in Southwest based on the predominance of oil palm processing enterprises. The second stage involved purposive selection of four (4) Local Government Areas (LGAs) based on concentration of oil palm processing enterprise in the selected LGAs. The Local Government Areas were, Okitipupa, Irele, Akure North and Ifedore of Ondo State, while were Gbonyi, Ise, Emure and Ikere were selected from Ekiti State. The third stage involved purposive selection of four (4) oil palm dominated processing communities from each LGA. The fourth stage involved stratified selection of 10 respondents (5 males and 5 females) from each community to capture both genders adequately. This gives a total sample size of 320 oil palm processors but only 275 was valid for the data analysis. The analytical techniques that were employed include:

(i) Gini Co-efficient and Lorenz Curve

The Gini Co-efficient and Lorenz curve was used to ascertain the level of income inequality between the male and female respondents in the study area (Objective 1). The Gini coefficient was used to measure income inequality. The coefficient can take any values between 0 to 1 (or 0 % to 100 %). A low Gini-coefficient indicates more equal income or wealth distribution, while a high Gini-coefficient indicates more unequal distribution of income. Zero (0) corresponds to perfect equality while one (1) corresponds to perfect inequality. The Gini coefficient is a numerical representation of degree of inequality in the distribution that is derived directly from Lorenz curve. The Gini Co-efficient model is given by:

$G = 1 - \Sigma XY$ …… (1)

Where:

G = value of the Gini coefficient

X = percentage of oil palm processor

Y = cumulative percentage of income from oil palm processing

(ii) Ordinary Least Square (OLS) Regression Model

Ordinary Least Square (OLS) Regression was used to determine factors influencing respondents' income. The model is specified as follow;

$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \varepsilon_i$……. (2)

Where

Y = Total income of the respondents (₦)

X_1 = Age of respondents (years)

X_2 = Education level (years spent in school)

X_3 = Access to Extension Service (Yes or No)

X_4 = Marital status (married, single, divorced)

X_5 = Processing Experience (years)

X_6 = Access to credit (Yes or No)

X_7 = Adoption decision (adopted =1 and 0, otherwise)

X_8 = Family size (numbers)

X_9= Land acquisition (Rent, Gift, Inheritance, Purchase)

ε_i= error term.

(iii) Regression Based Inequality Decomposition Index

The coefficients obtained from OLS regression was used to find the percentage contribution of the socioeconomic variables to the level of disparity using the Regression Based Inequality Decomposition Index (Objective III) as specified below

$S_j = Cov(\beta_j X_j, lnY)/\sigma^2(lnY) = \beta_j * \sigma(X_j) * cor(X_j, lnY)/\sigma(lnY)$ ……(3)

Where

β_j represents the estimated coefficient from the OLS regression of the *jth* characteristic of an individual, and X_j represents the value taken on by the *jth* characteristic, $\sigma(X_j)$ and $\sigma(lnY)$ are the standard deviation of X_j and of lnY, respectively and $cor(X_j, lnY)$ is the correlation between factor j and lnY. The positive S_j implies that j is an inequality-increasing factor whereas the negative S_j means that factor j decreases the inequality. From equation 3, the coefficient of the respondents' characteristics in relation to their income covaries. Similarly, the standard deviation of each of the respondent's income in relation to the respondent's characteristics is also, not the same. It can therefore be deduced when relating the inequality as dependent variable $S_j(lnY)$ which implies that the share of *jth* characteristic in inequality (Gini index), is because X_j is unequally distributed among the households.

RESULTS AND DISCUSSION

Estimation of income inequality using Gini Coefficient

The result of income inequality is presented in Table 1. The study ascertained the presence of income inequality among the processors in the study area. Table 1 presented the proportions of respondents (X) and income accrued (PHI) in each interval of income. The disparity in income earned by the female and male respondents revealed that more (30%) of the female respondents earned less than ₦100,000 per annum which formed nearly 7% of the total income share. About 26% of the male respondents earned between ₦100,001 and ₦200,000 per annum and this accounted for about 8% of the total income share. In the same vein, nearly 80% of the female processors earned at most ₦500,000 per annum with just 53% of the total income share, and just 20% of them earned about 47% of the total income share. In the case of male counterpart, nearly 72% of the processors earned at most ₦500,000 per annum which formed just 31% of the total income share. Few (28%) of them earned at least ₦500,000 per annum which accounted for nearly 68% of the total income share. Generally, the male farmers earned more income and therefore, richer than their female counterparts (NNF, 2007).

It was observed that few of female (20%) and male (28%) with a benchmark of ₦500,000 per annum, earned larger percentage of the total income shares of 47% and 68%. It was also noted that only 2% of the female earned 1 million naira and above and they formed about 9% of the total income share, while nearly 8% of the male processors earned at least 1 million naira per annum which accounted for about 39% of the total income share in the study area. This observation contradicts the earlier report that female processors earned more than their male processors in Ondo State (Koledoye and Deji, 2015). However, the change could be attributed to male processors getting more involved and taking oil palm as their main source of income as well as main business.

Therefore, Gini coefficient results for gender differentials on income disparity showed that there was more income inequality among male respondents (0.72) than the female counterpart (0.67) in the study area. This implied that the disparity between the highest and lowest income earners was about 72% and 67%, respectively for male and female respondents. This could be because of 2% and 8% of female and male respondents who contributed 9% and 39% respectively to the total income share in the study area. Despite the presence of income inequality, income disparity within the male group is higher than that of their female counterpart. The probable reason might be because of the few processors that earned over one million Naira who were more than the female, and it is believed that men have access to loan, assets, and technologies than the female. This result agrees with the Gini-coefficient of 0.64 and 0.58 reported for both male and female, respectively (Etim *et al*, 2020).

Based on the Lorenz's curves (Figs 1 & 2), it was observed that the curves deviated from the diagonal lines for female and male respondents which confirmed the presence of inequality among the processors in terms of income accrued from the enterprise. This depicts that male respondents contribute more to income inequality in the study area than their female counterparts. This concords with the findings of Awotide *et al*. (2015) and Etim *et al.* (2020).

Table 1: Distribution of respondents by Gini Coefficients Estimates

Income (₦)	Female			Male		
	X	PHI	XY	X	PHI	XY
> 100,000	0.30	0.07	0.02	0.14	0.02	0.00
100,001 – 200,000	0.16	0.07	0.02	0.26	0.08	0.02
200,001 – 300,000	0.23	0.19	0.08	0.20	0.10	0.04
300,001– 400,000	0.03	0.04	0.01	0.01	0.01	0.00
400,001 - 500,000	0.10	0.15	0.05	0.11	0.10	0.03
500,001 - 600,000	0.10	0.19	0.07	0.08	0.09	0.03
600,001 – 700,000	0.01	0.01	0.00	0.01	0.01	0.00
700,001 – 800,000	0.05	0.13	0.04	0.04	0.06	0.02
800,001 - 900,000	0.02	0.05	0.02	0.04	0.07	0.02
900,001 – 1,000,000	0.00	0.00	0.00	0.03	0.06	0.02
> 1,000,000	0.02	0.09	0.02	0.08	0.39	0.08
Lorenz's coefficient (∑XY)			0.33			0.28
Gini coefficient (1-∑XY)			0.67			0.72

Note: X = Proportion of respondents; Y = Cumulative proportion of respondents Income
PHI = Proportion of respondent Income.

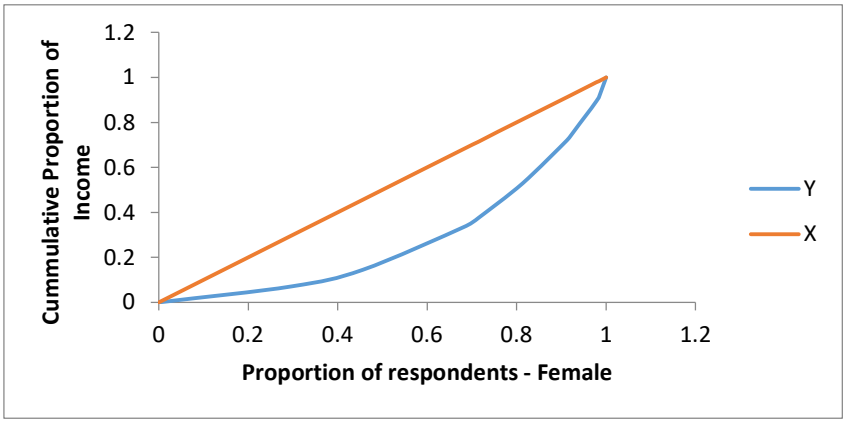

Figure 1: Lorenz's Curve for the Distribution of Female Income

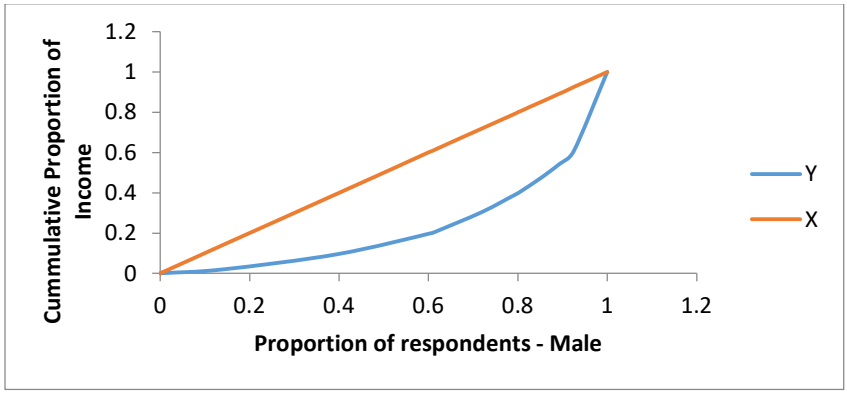

Figure 2: Lorenz's Curve for the Distribution of Male Income

Determinants of annual income earnings among respondents

The Ordinary Least Square (OLS) regression model result on the determinants of annual income of respondents is presented in the Table 2. The natural log of annual income was used as the dependent variable in the Table. The gender differentials result showed that, the R^2 estimate of female respondents was (0.61) and it was higher than that of male counterpart which was 0.44. This implied that the explanatory variables explained 61% and 44% of the variations in the annual income earnings of the female and male processors respectively. The F-values of 12.20 and 2.27 were statistically significant at 1% and 5% levels for female and male genders respectively, meaning that all the explanatory variables jointly exerted influence on the dependent variable.

Table 2 revealed that for the female respondents, six out of nine independent variables included in the model were statistically significant in addressing the income earnings, while marital status was omitted from the model because of collinearity problem. All the variables also had positive association with the annual income earnings except age of the female processors, family size, and land acquisition methods. Again, only two variables were statistically significant out of nine variables included in the model for male respondents. It was also observed that all the predictors were positively associated with annual income earnings except age of the male respondents and adoption of technology. Examining the results explicitly and based on the gender differentials, the following observations were reported.

Age: The coefficient of age of the processors was negative and significant at 1% level in addressing income earnings from oil palm processing. It showed that as the processor is getting older, the income earning will be reduced by 2.1%. The results observed between female and male respondents revealed that an advancement in the age of female and male respondents will result into 2.1% decrease in the income earned from the oil palm processing. This showed that age of the respondents had equal effect on their income and one can deduce that old processors will not be active and economically productive compared to the young processors.

Educational status: The coefficient of educational status of the female respondent was highly significant at 1% level and positively associated with the income earned, hence, education will contribute to the income of the female, while it was not statistically significant in the case of male respondent but, positively related with the income

earned. This indicated that more educated female processors earned about 4.6% income than the uneducated processors. This revealed that education enable processors to acquire knowledge and skills that could increase their incomes, thus bridging the inequality among the processors.

Access to extension services: The coefficient of access to extension services was positive and statistically significant at 10% level for both female and male respondents but the contribution of access to extension services (5%) to income earnings of male respondents is greater than that of female respondents (4.7%). The probable reason could be that male respondents might be given more attention than female respondents, which has led to an increase in the income earnings of male respondents.

Processing experience: The coefficient of the year of processing experience was positive and highly significant at 1% level in addressing the income earnings of the processors. The result revealed that a year increase in the processing experience will result in 2.5% and 4.3% increase in the income earned by female and male respondents, respectively. It showed that experienced male respondents would make more income than the experienced female respondents by 1.8%. The probable reason might be because of early involvement of male respondents in processing activities compared to the female.

Access to credit: The coefficient of access to credit by female respondents was positive and significant at 1% level, while the coefficient of access to credit by male was positive but did not significantly affect income earned. It can be interpreted that access to credit by female respondents will lead to increase in income earnings by 67.6%. The probable reason might be that when females obtain loans/credit, they always devote the money to the purpose, unlike their male counterparts who could divert loans to other activities such as marrying another wife or buying of cars.

Adoption of technology: It was observed that only female respondents' model had a positive coefficient and was statistically significant at 5% level. This implied that the adoption of technology would result to 35.2% increase in the income earnings of the female respondents. One can deduce that a high receptiveness to the adoption of technology by women could result in the female respondents' positive contribution to income earnings. Again, the study's coefficient of male respondents was negative and not statistically significant. This is contrary to the *apriori* expectation that the adoption of technology will lead to a decrease in the income earnings of the male respondents.

Table 2: Results of OLS in Estimating the Determinants of Processors Income

Variable	Female		Male	
	Coefficient	P-value	Coefficient	P-value
(Constant)	10.675	0.000	11.572	0.000
Age	-0.021***	0.000	-0.021***	0.007
Education	0.046***	0.004	0.032	0.296
Extension	0.047*	0.061	0.050*	0.084
Marital status	-	-	0.005	0.988
Experience	0.025***	0.001	0.043***	0.001
Credit	0.676***	0.000	0.273	0.228
Adoption	0.352**	0.056	-0.140	0.679
Family size	-0.006	0.964	0.195	0.324
Land acquisition	-0.013	0.780	0.003	0.949
R^2	0.610		0.444	
F-value	12.204***		2.269**	

Significant at***1%, **5%, *10%

Estimation of factor inequality weight

The regression-based decomposition approach proposed by Fields (2003) and employed by Saira and Ather (2016) enables this study to measure the inequality in annual income explained by the socio-economic characteristics of the processors. This was carried out by estimating the factor inequality weight, S_j, attributed to each of the j^{th} individual characteristics using the coefficient estimates from the regression output in Table 3. It should be noted that the positive value of the S_j means that the variable is increasing inequality whereas the negative value means that the variable is decreasing inequality. Therefore, the table presents the factor inequality weight of each variable, and the variables in independent model can explain 61% and 44% of the inequality in the annual income for the female and male respondents, respectively. All the variables have positive S_j except marital status and family size. All the S_j in female model were positive except variables such as education and family size. In the same vein, for the male all the S_j were positive except adoption of technology. This is in accordance with Nuno *et al.* (2012), which shows that inequality increases with

active age, number of unemployed individuals, educational level and main source of income.

Age of the processors: The result showed that age of male respondents increases the inequality by 9.8%, while it was unchanged in the case of the female. The probable reason might be because the male are more risk takers, active and economically productive, and have access to loan than the female, and this could amount to high income among the male.

Educational status of the Processors: Educational status will increase inequality and will help to generate more income opportunity among the male processors than the uneducated individual. The male respondents had a positive inequality weight of 0.4 which indicated that level of education increases inequality by 0.4%. While the factor weight inequality was negative in case of the female respondents, meaning that educational status is an inequality decreasing variable.

Access to Extension services: The coefficient of factor weight inequality was positive meaning that access to extension services is inequality increasing variable. The coefficient of factor weight inequality was positive for the male and female respondents. The gender differentials showed that access to extension services by female increases inequality by 2.2%, while access to extension services by male increases inequality by 1.5%. This is an indication that empowering female processors through extension agents might yield more results in term of high income than the male.

Marital status: It showed that marital status decreases the inequality. It showed that the being a married male increases inequality and its effect is also small. This could be due to the fact that young, agile and single processors could generate higher income than the married processors, and this might be because of the responsibilities attached to married processors that could restrict the ability to generate more income.

Years of processing experience: The coefficient of years of processing experience was positive for the male respondents and this increases inequality. The female's coefficient of years of processing experience was zero, indicating that year of experience neither increases nor decreases the inequality among the female respondents, while the male's years of processing experience increases inequality by 13.5%. It showed that the more experienced male respondents are, the more there will be income inequality among them.

Access to Credit: Access to credit increases the inequality among the processors. The gender differentials reflected that access to credit by female increases inequality by 1.1% while access to credit by male increases inequality by 0.2% and also it probably enables them to invest more in the processing enterprise which could result in adoption of technology and increase in the intensity of technology adoption compared to those that do not have access to credit.

Adoption decision on Technology: The result revealed that female respondents' adoption decision on technology increases inequality by 0.4%. This implied that adoption decision will enable them to employ technologies that would help them to generate more income and opportunities for increased output and thereby resulting in inequality while male respondent's adoption decision on technology decreases inequality by 0.002%.

Family Size: The coefficient of family size was negative, and this indicated that the variable decreases inequality by 0.004% with female, in the case of male processors, family size increases inequality by 0.4%.

Land Acquisition Methods: Land acquisition methods by the female and male respondents increase inequality by 0.02% and 0.002% respectively. Hence, processors that owned the land used for processing, through purchase or inherited, would likely increase inequality as a result of land tenure security compared to insecure landowners.

Table 3: Distribution by Factor Inequality Weight

Variable	Female		Male	
	Coefficient	Sj	Coefficient	Sj
Age	-0.021	0.00	-0.021	0.098
Education	0.046	-0.031	0.032	0.004
Extension	0.047	0.022	0.050	0.015
Marital Status	-	-	0.005	2.62E-07
Experience	0.025	0.00	0.043	0.135
Credit	0.676	0.011	0.273	0.002
Adoption	0.352	0.004	-0.140	-1.8E-05
Family size	-0.006	-3.8E-05	0.195	0.004
Land acquisition	-0.013	0.0002	0.003	1.51E-05

CONCLUSION

The study revealed that there was income disparity within the male processors and the female processors. However, there was more income disparity within male processors than their female counterpart. Also, the factors that contribute to

income inequality revealed that education and family size will reduce income inequality among the female while adoption of technology will reduce inequality among the male respondents. Age, extension services, marital status, experience, access to credit, technology adoption and land acquisition will increase inequality among the female respondents while age, extension services, marital status, experience, access to credit, education family size and land acquisition will increase income inequality among the male respondents.

In view of the findings of this study, it is recommended that the government should provide adequate and effective extension services in order to improve processors' livelihood. Also, adoption of technology reduces income inequality among the male. Therefore, processors should be encouraged and sensitized to adopt processing technology. Educating the female folks is an important tool in reducing income disparity, hence the female should be given proper and higher-level education. Having revealed that there was high income disparity within the male and the female oil palm processors, policy makers should formulate policies that will ensure reduction in the level of income inequality among the oil palm processors most especially the male. This will improve the welfare status of the oil palm processors in Nigeria.

REFERENCES

Adepoju, A. O. & Obayelu, O. A. (2013). Livelihood Diversification and Welfare of Rural Households in Ondo State, Nigeria. *Journal of Development and Agricultural Economics*, 5(12): 482-489.

Addison, T. & Cornia, G. A. (2001). Income Distribution Policies for Faster Poverty Reduction. WIDER Discussion Paper.

Awotide, B. A., Awoyemi, T. T. & Oluwatayo, I. B. (2015). 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*, 5(3): 20–27.

Etim, E. J., Baba, K. M., Ojo, M. A. & Ndanitsa, M. A. (2020). Analysis of Gender Differentials in Income Inequality among Crayfish Harvesting Households in Selected States of Niger Delta Region of Nigeria. *Journal of Agripreneurship and Sustainable Development*, 3(3):65-81.

Fields, G. (2003). Accounting for Income Inequality and its Change: A New Method, with Application to the Distribution of Earnings in the United States. *Research in Labour Economics*, 22, 1-38.

Iwayemi, A., Afeikhena J. & Adeboyejo, T. (2000) "Inequality: Concept and Issues" Centre for Econometric and Allied Research, University of Ibadan, Nigeria.

Koledoye, G. F. & Deji, O. F. (2015). Gender Analysis of Technology Utilisation among Small Scale Oil Palm Fruits Processors in Ondo State, Nigeria. Acta Agronómica. 64 (1): 36-47.

Korawit B. (2012). Determinants of Income Inequality: Research Submitted for Seminar in International Economics Thammasat University. https://www.scribd.com/document/105299674/Determinants-of-Income-Inequality. As retrieved August 17, 2022

Megan, M. (2022). Why Agriculture in Nigeria is Important. The Borgen project. https://borgenproject.org/why-agriculture-in-nigeria-is-important/ as retrieved in January 6, 2022.

New Nigeria Foundation (NNF). (2007). Soya Value Chain Baseline Survey. Monograph Series # 32. # 32. September 2007. Pp.1-112 http://www.propcommaikarfi.org/wp-content/ uploads/2020/04/32-Soya-value-chain-baseline-survey-9-07-1.pdf as retrieved in August 30, 2022.

Nuno, C., Nadia, S. & Ana, P. A. (2012). Determinant of Income Inequality-Evidence from Portuguese Region. Economics Bulletin. 32(3): 2056-2064

Olagunju, F. I. (2008). Economics of Palm Oil Processing in Southwestern Nigeria. *International Journal of Agricultural Economics and Rural Development*, 1 (2): 69 -77. *Journal of Agricultural Economics and Rural Development*, 1 (2): 69 -77.

Osei-Amponsah C., Visser, L., Adjei-Nsiah, S., Struik, P.C., Sakyi-Dawson, O. & Stomph, T.J. (2012). Processing Practices of Small-scale Palm Oil Producers in the Kwaebibirem

District, Ghana: A diagnostic study. NJAS – Wageningen. *Journal of Life Sciences*, 60– 63: 49-56.

Saira N. & Ather M. A. (2016). Determinants of Income Inequality among the Earners in Pakistan. http://authoring.nust.edu.pk/INSTITUTIONS/Schools/S3H/Research/Documents/Saira. As retrieved January 20, 2022.

Winkelmann, L. & Winkelmann, R. (2010). Does Inequality Harm the Middle Class? *Kyklo*s, 63(2): 301-316.