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Assessment of Income Inequality among Rural Women Entrepreneurs in South -West, Nigeria

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ABSTRACT
Inequality is a manifestation as well as a strong cause of poverty. Hence this study examined income inequality among rural women entrepreneurs in Southwest, Nigeria. Multistage sampling technique was used to select 200 small scale cassava processors with the use of questionnaire. The data were subjected to descriptive statistics, Lorenz curve, Gini coefficient and Double-Log regression model. The findings showed that majority of the small scale cassava processors in Oyo, Osun and Ondo earned below ₦200, 000 per annum while most of the cassava processors in Ogun State earned above N600, 000 per annum. The result of the Gini coefficient (0.58) showed that there was inequality among the respondents with Ogun state having the lowest (0.16). Also the results of the regression analysis showed that sex, number of family size and labour significantly affected the income of the small scale cassava processors in the study area. In conclusion, large household size should be discouraged among cassava processors in Southwest since it has reducing effect on income and invariably increase income inequality.
Keywords: Cassava processors, income inequality, small-scale enterprise, southwest, Nigeria

INTRODUCTION

Nigeria has one of the world's highest economic growth rates (averaging 7.4 percent over the last decade), with plenty of natural and human resources. However, it retains a high level of poverty, with 63 percent, that is, 112.47 million of its population living below US $1 daily which invariably indicates high income inequality since poverty and income iequality are closely related (National Bureau of Statistics (NBS), 2011).

There have been attempts at poverty alleviation in Nigeria most notably with programmes by Federal Government such as; National Accelerated Food Production Programme and the Nigerian Agricultural and Co-operative Bank, Operation Feed the Nation, Green Revolution Programme, Directorate of Food, Roads and Rural Infrastructure (DFRRI), Family Support Programme, Presidential Initiatives on cocoa, casssava, rice, livestock, fisheries and vegetables, Family Economic Advancement Programme, National Poverty Eradication Programme (NAPEP), National Economic Empowerment and Development Scheme (NEEDS), Local Empowerment and Environmental Management Programme (LEEMP), Community-Based Poverty Reduction Project (CPRP) and Community and Social Development Project (CSDP), National *Fadama* Development Project (*Fadama* I, II and III) and the Cassava Revolution Programme (CRP). The cassava revolution was initiated so that cassava can be seen as a poverty fighter in Africa (Nuhu, 2007; Federal Ministry of Agriculturr and Water Resources, 2008).

Nigeria is the largest producer of cassava with an annual ouput of over 54 million tonnes in 2014. Almost all farmers in the main cassava belt of the southeatern, southwestern and central zones grow cassava. Cassava is important, not just as a food crop but even so as a major source of cash income for producing household. Cassava is usually consumed in processed form. Women play a central role in cassava production, processing and marketing contributing about 58% of the total Agric labour in the southwest zone. Despite the rapid growth in cassava production and various development programmes implemented by government, cassava processing is still constrained by a number of factors such as limited diversification of processing options, inadequate technology, access to improved processing this could be due to poverty level which invariably is caused by income inequality (Onugu, 2005).
Although several studies such as Aigbokhan (2000) Ipinnaiye (2001); Elbers *et al.,* (2003); Awoyemi & Adeoti (2004); Senik (2006); Oyekale *et al.,* (2006); Oluwasola (2010); Idowu *et al.,* (2011); Akinlade (2011); Bamiro, Afolabi & Daramola (2012); Esenwa *et al.,* (2015); Omotola & Salman (2015) have worked on income inequality and poverty in Nigeria but the issue of cassava processors have not been properly addressed. Since levels of poverty vary considerably likewise is inequality, however, this is not just across regions and countries, but also within countries. Hence, this study seeks to examine the income inequality

among small scale cassava processors in Southwest, Nigeria. The study will specifically examine the following objectives:

i. Level of Income and income inequality among small scale cassava processors
ii. Factors affecting the cassava processors' revenue in the study area.

RESEARCH METHODOLOGY

The study was conducted in South West, Nigeria. The area comprises of Ogun, Osun, Ondo, Oyo, Lagos and Ekiti states. It is bounded in the North and East by Kwara and Kogi states, in the west by the Republic of Benin and in the south by the Atlantic Ocean. The area has a land mass of 76,852 square kilometers and population of 25.2 million (NPC, 2006). The area lies between longitude 2^0 31^1 and 6^0 00^1 East and Latitude 6^0 21^1 and 8^0 37^1 North (Agboola, 1979) It is majorly a Yoruba speaking area, although there are different dialects even within the same state. The weather conditions vary between the two distinct seasons in Nigeria; the rainy season (March - November) and the dry season (November - February). The dry season ushers in Harmattan dust; cold dry winds from the northern deserts blow into the southern regions around this time. The three main agro – ecological zones in the area are the swamp on the Atlantic coast, tropical rainforest in the middle and guinea savannah in the North. The study area has 85 constituted Forest reserves with a forest area cover of 842,499 hectare. Varieties of animal husbandry, food and cash crops cultivation systems are accommodated in the area. Prominent crops cultivated include oil palm, cocoa, citruses, plantain, banana, cassava, vegetables, maize, rice, Kolanut, cashew, sugar cane and pin – apple.

Data Collection and Sampling Technique

Primary data were collected for the purpose of this study using structured questionnaire. A multistage sampling technique was employed. First stage is the purposive selection of five States notable for cassava processing which are Ogun, Oyo, Ondo, Osun and Ekiti. The second stage is random selection of one Local Government Area (LGA) from each State. The next stage is the random selection of two villages from each of the selected LGAs in the five states. The final stage is the random selection of 20 small scale cassava processors from each village. The total sample size forthis study is 200 Small scale cassava processors. These processors process traditional African products such as gari,

starch, fufu, lafun and pupuru. These could be a single product while some processed multiple products such as gari and starch; gari and fufu; gari and lafun; gari and pupuru; starch and lafun; Fufu and lafun; gari, starch and lafun; gari, fufu and lafun; gari, starch, fufu and lafun

Analytical Technique

Analytical techniques employed include descriptive statistics such as mean and standard deviation analyzing the pattern of income. Income inequality was measured by using both the Lorenz curve and Gini coefficient while double-log regression model was used to determine factors affecting the income of the respondents in Southwest, Nigeria.

Measurement of Income Inequality: Income inequality of households was achieved by using Gini Coefficient. To calculate Gini –coefficient, Morduch and Sicular (2002) noted that where incomes are considered so that $Y_1 \leq Y_2 \leq Y_3 \leq \ldots \leq Y_n$.

The Gini coefficient is given by: $I_{Gini}(Y) = \sum_{i=1}^{n} a_i(Y) Y_i$ and $a_i(Y) = \frac{2}{n^2 \mu}\left(i - \frac{n+1}{2}\right)$ ---(1)

Therefore, $I_{Gini}(Y) = \frac{2}{n^2 \mu}\sum_{i=1}^{n}\left(i - \frac{n+1}{2}\right) Y_i$ ---------- (2)

Where,

n	=	the number of observations
μ	=	the mean of the distribution
Y_i	=	the income of the ith household
$a_i(Y_i)$	=	the weight
i	=	the corresponding rank of total income.

Determinants of Income: double-log regression analysis was used to determine the factors affecting income of cassava processors in Southwest, Nigeria

Double - log regression model is specified as:

$\text{Log } Yi = b_o + b_1 \text{Log } X_1 + b_2 \text{ Log } X_2 + b_3 \text{Log } X_3 + b_4 \text{Log } X_4 + b_5 \text{Log } X_5 + Ui$

Log Y = natural log; Ui = error term; b_0 = intercept term; Xi = vectors of explanatory variables which are gender (1=male and 0 otherwise) education (years spent in school), age, household size and number of labour employed.

RESULTS AND DISCUSSION

Demographic Characteristics of the Small Scale Cassava Processors

Table1 presents the demographic characteristics of the respondents. The findings revealed that most cassava processors were females in all the five States, implying that cassava entrprise is female dominated which is contrary to the findings of Schmidt and Parker (2003) who reported that male–owned enterprises are represented in all industries and that more lucrative manufacturing sector is dominated by males who have a long tradition of skills; also, males have significantly higher entrepreneurial intension than females which was also reported by Mazzarol *et al.,* (1999). But the finding confirms the view that the processing is predominantly a female enterprise in Nigeria and indeed, most African societies (Lewis, 1984; Ajayi, 1995; Oluwasola, 2010). It was further showed, that majority of the respondents was below 50 years old with a mean age of 44 years and was within the age range of 40 – 49 years. This shows that the respondents were fairly young and active in age. This study further showed that majority (58% in Oyo, 70% in Osun, 75% in Ondo, 63% in Ekiti and 80% in Ogun) of the small scale cassava processors were married which implies that they are able to take up any form of responsibilities within their capacity. Processors in Ondo and Ogun (37.5% and 42.5%) were able to complete their secondary school education. This level of educational attainment could impact positively as regards innovative ideas and improving their businesses; also the processors were fairly educated and one could deduce that this would decrease income inequality among cassava processors in Ondo and Ogun States. The number of people in a particular household is seen as one of the key determinants of income inequality. The average number of people in a particular household was 5 members per family and most of the cassava processors had 4 to 6 members per family.

Table 1: Socio economic characteristics of Small Scale Cassava Processors

Socio economic characteristics	Oyo		Osun		Ondo		Ekiti		Ogun	
	Freq.	Percent	Freq.	Percen	Freq.	Percen	Freq.	Percen	Freq.	Percen
Gender										
Male	14	35.0	19	47.5	18	45.0	17	42.5	10	25.0
Female	26	65.0	21	52.5	22	55.0	23	57.5	30	75.0
Marital Status										
Single	5	12.5	7	17.5	3	7. 5	---	--	4	10.0
Married	23	57.5	28	70.0	30	75.0	25	62.5	32	80.0

Widow/Separated	12	30.0	5	12.5	7	17.5	15	37.5	4	10.0
Age										
< 30	5	12.5	10	25.0	7	17.5	8	20.0	6	15.0
30 – 39	10	25.0	8	20.0	10	25.0	12	30.0	11	27.5
40 – 49	20	50.0	15	37.5	18	45.0	17	42.5	18	45.0
50 – 59	3	7.5	4	10.0	2	5.0	2	5.0	4	10.0
≥ 60	2	5.0	3	7.5	3	7.5	1	2.5	1	2.5
Experience										
1 – 5	5	12.5	7	17.5	3	7.5	10	25.0	7	17.5
6 - 10	25	62.5	20	50.0	7	17.5	15	37.5	4	10.0
11 – 15	5	12.5	7	17.5	10	25.0	10	25.0	4	10.0
≥16	5	12.5	6	15.0	20	50.0	5	12.5	25	62.5
Educational Background										
No formal	10	25.0	2	5.0	5	12.5	7	17.5	10	25.0
Incomplete	5	12.5	7	17.5	5	12.5	7	17.5	5	12.5
Primary	15	37.5	20	50.0	10	25.0	10	25.0	5	12.5
Completed	5	12.5	6	15.0	5	12.5	8	20.0	3	7.5
Primary	5	12.5	5	12.5	15	37.5	8	20.0	17	42.5
Incomplete Second.										
Completed Second.										
Household size										
1 – 3	5	12.5	3	7.5	10	25.0	12	30.0	7	17.5
4 – 6	18	45.0	22	55.0	20	50.0	18	45.0	23	57.5
7 – 9	10	25.0	9	22.5	6	15.0	8	20.0	5	12.5
≥10	7	17.5	6	15.0	4	10.0	2	5.0	5	12.5

Source: Computed from field survey, 2014

Distribution of Income of Cassava Processors in Southwest, Nigeria

Table 2, Table 3 and Figure 1 present the income of the cassava processors. It was revealed that 75 percent of the small scale cassava processors in Oyo State, 50 percent in Osun, 62.5 percent in Ondo State and 37.5 percent in Ekiti State earned income less than ₦200,000 per annum; while those in Ogun State earned income above ₦600,000 per annum. Table 2 also revealed that Ogun State has the largest percentage income's share (34%) followed by Oyo State (23.3%) with Ondo State having the least income's share (8.4%). This revealed that cassava processors in Ogun State were able to earn more than other States which is contrary to a prior expectation since they all are into the same business. The high income could be as a result of the proximity to commercial centre

(especially Lagos State) where their products are being sold. It could also be due to the fact that majority of the processors in Ogun State are more experienced in the business and highly educated compared to other processors in the othe States. Also the Lorenz curve in Figure 1 furher revealed the the cummulative income of the repondents with minimum value of ₦ 597,000 on the 20th quintile and maximum value of ₦18,050,000 which is on the 100th quintile. The implication of this finding is that cassava processing is a lucrative one.

Table 2: Income of the Selected Entrepreneurs per Annum

Variable	Oyo		Osun		Ondo		Ekiti		Ogun	
Income	F	%	F	%	F	%	F	%	F	%
≤ 200,000	30	75.0	20	50.0	25	62.5	15	37.5	-	
200,001-400,000	5	12.5	10	25.0	9	22.5	9	22.5		
400, 001-600,000	5	12.5	6	15.0	6	15.0	9	22.5	5	12.5
> 600,000	-		4	10.0	-	-	7	17.5	35	87.5
Total income (₦)	6,152,873.00		5,112,860.00		2,234,176.00		3,900,891.00		9,046,200.00	
Income's share(%)	23.3		19.3		8.4		14.8		34.2	

Source: Computed from field survey, 2014

Table 3: Computation of Income of Small Scale Cassava Processors

Quintile	Income	Proportion of Income	Cumulative of Income	Proportion of Quintile
0	0	0	0	0
20	597,000	0.02	0.02	0.2
40	1,380,000	0.05	0.07	0.4
60	2,040,000	0.08	0.15	0.6
80	4,380,000	0.16	0.31	0.8
100	18,050,000	0.69	1.00	1.0

Source: Computed from field survey, 2014

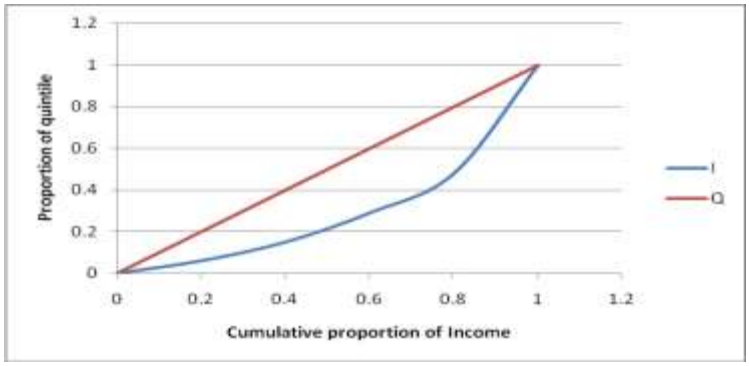

Figure 1: The Lorenz Curve distribution of income
Source: Computed from field survey, 2014

Income Inequality of cassava processors in southwest, Nigeria

Table 4 revealed income inequality of cassava processors by State. Gini coefficient examined the inequality of income among the small scale cassava processors in Southwest, Nigeria. The level of income inequality among cassava processors is 0.58. The implication of this value is that there is a certain level of income inequality among the cassava processors with a difference of 58 percent among them. In other words the difference in income earned among the cassava processors in this enterprise is high. The results further shows that among the States, Ekiti State had the highest level of income inequality of 0.69 followed by Oyo State (0.57) with Ogun State having the least income inequality of 0.16. Out of five State considered in this study four States have high income inequality (Ekiti, Oyo, Osun and Ondo) with exception of Ogun State that has low income inequality. This is an indication that the differnce in the income earned by cassava processors in ogun State is low compared with the remaining four States. The differences could be due to low access capital, market access, and other constraints identified by the processors. Therefore cassava processors in this remaining states should be targeted by Federal/State government's development programme (s). The result discussed above shows that although the total income of some States was high but with high income inequality.

Table 4: Income Inequality distribution among Small Scale Cassava Processors by State

State	Income Inequality
Oyo	0.57
Osun	0.48
Ondo	0.41
Ekiti	0.69
Ogun	0.16
Total	0.58

Source: Computed from field survey, 2014

Factors determining Small Scale Cassava Processors Income in Southwest, Nigeria

The result of coefficient of determination (R^2) for small scale cassava processors in Southwest, Nigeria was 0.577 as presented in Table 5. It implies that, there is 57.7 percent variation in the income among them as explained by the explanatory variables. F-value in the model was significant at 5 percent level of probability indicating all explanatory inputs jointly exerted significant influence on income. The results showed that labour had positive coefficients, implying, increase in labour input, increases income of the cassava processors while gender and household size had a negative coefficient indicating that increase in household size decreases income of the respondents as well as having more female in cassava processing increases their income.

Table 5: Factors determining Small Scale Cassava Processors Income in Southwest, Nigeria

Explanatory variables	Coefficients (t - value)
Constant	6.842 (2.992)*
Gender	- 0.898 (- 3.598)*
Age	0.801 (1.126)
Household size	-1.043 (2.277)*
Education	0.346 (0.884)
Labour	0.909 (6.578)*
R^2	0.577
F – value	25.34*

Source: Computed from field survey, 2014

* Means significant at 5 percent level of probability

CONCLUSION

There is income inequality among the small scale cassava processors with Gini coefficient of 0.58. This income inequality among them is not a good indicator for a developing economy like Nigeria most especially the agricultural sector. Therefore, It can be concluded that large household size should be discouraged among them so as to reduce income inequality. Also from the findings of this study, it is recommended that policies targeted at improving income of cassava processors (especially in Oyo, Osun, Ekiti and Ondo States) should be put in place so as to reduce their income inequality as well as price stabilization of their products to ensure uniformity.

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