

A Gender Analysis of Poverty Gap among Farm Families in Ukwani Local Government Area of Delta State, Nigeria

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Abstract: This study was carried out to estimate poverty gap between female and male headed farm families in Ukwani Local Government Area (LGA) of Delta State, Nigeria. Simple random sampling technique was used to select 7 out of the 10 communities that make up the LGA. From each of these selected communities 10 respondents were selected from a list of farm families drawn with assistance of extension officers covering the area. This gave a total sample size of 70 respondents. The study was conducted in 2008. Various methods were employed in analyzing the data, including descriptive statistical tools and inferential statistics such as t-test and ordinary least square regression analysis. Results of the study indicate that the farmers were characteristically smallholders with about 50% of males and 83% of female household heads having not >1.50 ha of farm. On the poverty levels of the households, it was found that the core poverty and moderate poverty lines for male, female and all households were ₦4078, ₦2217 and ₦3376 and ₦8146, ₦5435 and ₦6752, respectively. This implies that poverty was wide spread among the farm households especially the female headed ones. A test analysis to determine the effect of selected socioeconomic characteristics of the household heads on their levels of poverty indicates that four variables were significantly related to the household poverty levels, namely level of formal education, family size, farm size and household monthly income ($p \leq 0.05$). A number of recommendations were made including the need for family planning among the rural households so that they produce only the number of children they can take care of to guarantee them minimum acceptable standard of living.

Key words: Gender analysis, poverty gap, incidence of poverty, poverty index, Delta state

INTRODUCTION

Poverty involves not only the lack of the necessities of material well-being but the denial of opportunities for living a tolerable life. Life can be deprived of knowledge and communication, which can rob of dignity, confidence and self respect of man (Narayan *et al.*, 2000).

The poor are those whose expenditure (or income) falls below a poverty line. Households whose consumption expenditure falls below this line are considered to be poor. The rural poor especially women lack basic human capabilities that deny livelihood. They need to be empowered to enable them develop self confidence and raise their social status in order to improve their social and economic condition. According to the Nigerian Federal Office of Statistics 1999, in 1960 about 15% of the population was poor, but by 1980 this percentage has risen to 28%. By 1996, the incidence of poverty in Nigeria was 66% or 76.6 million people. Poverty incidence is the proportion of population whose income

falls below the subsistence minimum. The UN human poverty index in 1999 placed Nigerian amongst the 25 poorest nations in the world. Poverty depth shows how poor are poor and it measures average consumption/income shortfall of poor population expressed as proportion of absolute poverty line.

According to a demographic survey of the National Planning Commission in 1996, female headed households constitute 23% in South-East Nigeria. This empirical data implies that many Nigeria women at least 16 million of them (Ogbonna and Okoroafor, 2004) spear head household economy in both rural and urban centres. Women who assume household headship position in Nigeria include women with handicapped husbands, widows, divorce women and unmarried mothers. Thus circumstances beyond their control enforce the headship of their household on them. Batie (1992) observed keenly that women headed households bear the burden for catering for their handicapped husbands (whether physically or financially), their children and wards.

The poor women farm family heads usually belong to lower class over inherited land. Batie (1992) observed that women household heads subsist at the various level of deprivation. They are faced with acute shortage of production resources. They respond by intensifying and over exploiting of available natural resources since they must ensure survival of their households.

In sub-Sahara Africa, including Nigeria poverty is widespread among people with low education, unstable employment, unemployment, low status job and absence of material wealth. All these factors are prevalent and unequal among rural households (Adams and Jane, 1995). The situation is even worse in this part of Nigeria, especially income inequality, a clear signal of poverty which is more to the disadvantage of women farmers. In Ukwani local government area, unequal access to land tenure, education, extension services, technology and credits has led to inequalities in farm income and standard of living among different male and female headed households. Hence women household heads are caught in the vicious cycle of poor socioeconomic status.

There is therefore the need for an empirical study that is capable of lifting them out of poverty, as rural poverty has been explained in the context of undesirable equilibrium in the rural economy.

The specific objectives of the study are to:

- Identify and realize socio-economic characteristics of female and male headed household in Ukwani local government area
- Measure the poverty gap between female and male headed farm families in the study area
- Determine and compare the poverty incidence, depth and severity among male and female farming family
- Identify and analyze the determinants, of poverty incidence among farm family head in the study area

Hypotheses: This study was guided with the following hypotheses:

Ho₁: There is no significant gap between poverty levels of male and female farming heads in the study area.

Ho₂: The selected socio-economic variables do not have economic effect in the determination of poverty among farm family heads in the study area.

MATERIALS AND METHODS

The study area is Ukwani local government area of Delta state, Nigeria. It has a population of 120390 composed of 59162 males and 61228 females (NPC, 2006).

The area is approximately between longitude 4.45° and 6.30° West and latitude 5.45° and 30° North of the equator.

The major occupation of the indigenes in the area is farming, transportation, petty trading and several non farm activities such as food processing and vocational jobs. The local government area is made up of ten communities, which includes: Akoku, Amai, Chedei, Eziokpor, Ezionum, Obiaruku, Umukwata, Umuebu, Umuaja and Umutu.

Sampling procedure: Simple random sampling technique was used to select seven out of the 10 communities. From each of these selected communities 10 respondents were selected from a list of farm families drawn with assistance of extension officers covering the area. This gave a total sample size of 70 correspondents.

Method of data collection: Data for this study was mainly from primary sources. The primary data were collected with the use of oral interview and structured questionnaire. The questionnaire was used to seek information on the socioeconomic characteristics of the respondents.

Methods of data analysis: Various methods were employed in analyzing the data, including various descriptive statistical tools such as the use of tables, mean, percentages and t-test and regression inferential tool as well as poverty measure using Foster and Thorbecke (1984) to estimate the incidence of poverty in the study area.

Specifically, objective 1 was realised by means of descriptive statistics. Objective 2 was achieved using poverty index measure, while objectives 3 and 4 were achieved by means of t-test and ordinary least square regression analysis respectively.

Model specification: The poverty line in the area was derived from Mean per Capita Household Expenditure (MCHE) as:

$$\text{Per capita household expenditure} = \frac{\text{THME}}{\text{HS}}$$

Where:

THME = The total household monthly expenditure (₦)

HS = The household size

The Mean Per Capita Expenditure (MPCE) for all respondents will be determined as the ratio of total per capita expenditure for all households to total number of households as follows:

$$MPCE = \frac{TPCE}{TNH}$$

Where:

TPCE = Total per capita expenditure for all households

TNH = Total number of households

Three mutually exclusive classes to be obtained from the MPCE are:

- A core poverty line equivalent to one third of MPCE
- The moderate poverty line equivalent to two third of the MPCE
- The non-poor
- The poverty incidence was measured using Foster and Thorbecke (1984) (FGT) approach

The FGT measure is given mathematically as follows:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left[\frac{Z - Y_i}{Z} \right]^{\alpha}$$

Where:

$\alpha = 0$

Y_i = Per capita household expenditure

Z = Poverty line

n = Total population

q = Number of poor people (below poverty line)

This is simply proportion of the poor to the total population (i.e., head ratio).

$$P_0 = \frac{q}{n} = H$$

Where:

P_0 = Poverty index

H = Head count

This measures the depth of poverty, otherwise called poverty gap between poor household and poverty line, If $\alpha = 1$

$$P_1 = \frac{1}{n} \sum_{i=1}^q \left[\frac{Z - Y_i}{Z} \right]$$

and if $\alpha = 2$

$$P_2 = \frac{1}{n} \sum_{i=1}^q \left[\frac{Z - Y_i}{Z} \right]^2$$

t-test was used to compare the poverty indices of men with those of women. This is given by the formula:

$$t_{cal} = \frac{M_m - W_m}{\sqrt{\frac{S_m}{n_m - 1} + \frac{S_w}{n_w - 1}}}$$

Where:

M_m = Mean of poverty incidence of male headed household

W_m = Mean of poverty incidence of female headed household

S_m = Variance for men

S_w = Variance for women

N_m = Number of subjects in men group

N_w = Number of subjects in men group

Least square regression, commonly called OLS regression was used to analyse the determinants of poverty gap among the respondents. In the dichotomous (i.e., binary), the independent variable may be quantitative categorical or a mixture of the two. The model is as given:

In the OLS regression model all the predictor variable were captured in the equation simultaneously and the significant variables which best explain the probability of the odd is the dependent variable. The regression analysis was carried out to determine the effect of selected socioeconomic characteristics of the household heads on their levels of poverty. This analysis was done to enable the test of hypothesis which states that the selected socioeconomic variables of the respondents do not have significant effect on their poverty levels. The regression model is given as:

$$PL = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, \epsilon)$$

Where:

X_1 = Gender

X_2 = Age of respondents

X_3 = Level of formal education

X_4 = Farm size

X_5 = Family size

X_6 = Household monthly income

X_7 = Household monthly savings

X_8 = Farming experience

ϵ = Stochastic error term

Three functional forms, namely linear, semi log and double log were estimated. Based on fulfillment of statistical, econometric and theoretical conditions, the best fit to the data set was adopted as the lead form and therefore used for further analyses.

RESULTS AND DISCUSSION

Socio-economic characteristic of female and male headed farming households: The socioeconomic characteristics of the respondents are presented in Table 1. The Table 1 shows that about 9% of male and 14% female respondents, respectively were <30 years of age, while majority of the farmers (51.4%) had a family size of

Table 1: Socio-economic characteristics of female and male headed households

Age ranges	Male	Female	All farmers
≤30 years	3 (8.8)	5 (13.9)	8 (11.4)
31-40 years	10 (29.4)	9 (25.0)	19 (27.1)
41-50	7 (20.6)	14 (38.9)	21 (30.0)
>50 year	14 (41.2)	8 (22.9)	22 (31.4)
Household size			
≤3	8 (23.5)	8 (22.2)	16 (22.9)
4-6	13 (38.2)	23 (63.9)	36 (51.4)
7-10	9 (26.5)	1 (2.8)	10 (14.3)
>10	4 (11.8)	4 (11.1)	8 (11.4)
Marital status			
Single	4 (11.8)	4 (11.1)	8 (11.4)
Married	24 (70.6)	22 (61.1)	46 (65.7)
Divorced	2 (5.9)	3 (8.3)	5 (7.1)
Widow/widower	4 (11.8)	7 (19.4)	11 (15.7)
Educational level			
No formal education	13 (38.2)	15 (41.7)	28 (40.0)
Primary education	16 (47.1)	12 (33.3)	28 (40.0)
Secondary education	2 (5.9)	4 (11.1)	6 (8.6)
NCE/HND	3 (8.8)	4 (11.1)	7 (10.0)
First and higher degree	0 (0)	1 (2.8)	1 (1.4)
Type of enterprise			
Arable crop farming	29 (41.4)	35 (97.2)	64 (91.4)
Tree crops farming	2 (5.9)	0 (0)	2 (2.9)
Mixed farming	3 (8.8)	1 (2.8)	4 (5.7)
Non farm income activities			
Civil service	26 (76.5)	30 (83.3)	56 (80.0)
Artisan/fashion services	4 (11.8)	4 (11.1)	8 (11.4)
Trading and transport services	2 (5.9)	0 (0)	2 (2.9)
Grading /agro services	2 (5.9)	2 (5.6)	4 (5.7)
Methods of land acquisition			
Individual ownership/inheritance	9 (26.5)	7 (19.4)	16 (22.9)
Community ownership	20 (25.8)	23 (63.9)	43 (61.4)
Rented/purchase	5 (14.7)	6 (16.7)	11 (15.7)
Farm size (ha)			
≤1.00	0 (0)	3 (8.3)	3 (4.3)
1.10-1.50	17 (50.0)	27 (75.0)	44 (62.9)
>1.50	11 (32.4)	2 (5.6)	13 (18.6)
Farming experience (years)			
≤10	1 (2.9)	2 (5.6)	3 (4.3)
11-15	7 (20.6)	7 (19.4)	14 (20.0)
16-20	9 (26.5)	5 (13.9)	14 (20.0)
21-30	5 (14.7)	6 (16.7)	11 (15.7)

Figures in parentheses are percentage of column total

between 4 and 6. Also about 40% of the entire farmers had no formal education, while as much as 67.2% of the respondents had farm sizes of not >1.5 ha of land.

Poverty indices: The poverty indices for male and female-headed as well all households are shown in Table 2. On the average, the male headed, female headed and all households have household sizes of 5.29, 4.94 and 5.11, respectively. The sizes appear to be evenly distributed, although the male-headed households appear to be larger than the female headed ones. The mean per capita income and mean per capita expenditure for the male headed, female headed and all households were ₦16360 and 12219, ₦11808 and 8153 and ₦13562 and 10128, respectively. Again, all values for male appear to be higher than for female headed households.

The core poverty and moderate poverty lines for male, female and all households were ₦4078, 2217 and ₦3376 and 8146, ₦5435 and 6752, respectively. The results show that with respect to the incidence of poverty, about 43, 57 and 51% of male, female and all households respectively were below the poverty line.

This indicates that poverty is wide spread among the farm households especially the female headed ones. Only about 25, 16 and 20% of the male headed, female headed and all households have household respectively were non-poor among the respondents.

The intensity of poverty (poverty gap index) were 25.13, 34.82 and 28.98% for the male headed, female headed and all households household, respectively. These reflect the mean of the gap between the core poor standard of living and the poverty line. They show the shortfall of the core Poor's expenditure from the poverty line expressed as the average of all in the population. This is a measure of the cost of eliminating poverty (relative to the poverty line), because it shows how much would have to be transferred to the poor to bring their incomes or expenditures up to the poverty line (as a proportion of the poverty line). The minimum cost of eliminating poverty using targeted transfers is simply the sum of all the poverty gaps in a population; every gap is filled up to the poverty line. From the result, it could be inferred that about 25% (₦1766), 35% (₦1544) and 29% (₦1711) are needed to bring their incomes or expenditures of the male headed, female headed and all households up to the poverty line, respectively.

The squared poverty gaps (poverty severity/depth) were 6.32, 12.12 and 8.40% for male headed, female headed and all households respectively. This shows there is more inequality of standard of living among the female headed than the male headed households. This means that poverty tends to be more severe among female headed than the male headed households.

The t-test for differences in poverty indicators between female headed and the male headed households are presented in Table 3. The results show that while household size and depth of poverty are significantly the same between the two groups at ($p \leq 0.05$), the household monthly income, total household monthly expenditure, mean per capita household expenditure, mean per capita household income and intensity of poverty appear to be significantly different between the two groups. The male headed households had higher values for household monthly income, total household monthly expenditure, mean per capita household expenditure and mean per capita household income, but lower values for intensity of poverty than female households respectively. These imply overall higher living standards among male headed households than those of female headed households.

Table 2: Poverty Indices by male and female headed households

Poverty indices	Male headed household	Female headed household	All households
Number of households	34	36	70
Mean household size	5.29	4.94	5.11
Mean per capita income (₦)	16360	11808	13562
Mean per capita expenditure (₦)	12219	8153	10128
Core poverty line (₦) (%)	4078 (43.30)	2718 (56.80)	3376 (50.67)
Moderate poverty line (₦) (%)	8146 (31.70)	5435 (27.01)	6752 (29.11)
Non-Poor (₦) (%)	≥ 8146 (25.00)	≥ 5435 (16.19)	≥ 6752 (20.22)
Poverty incidence (%)	43.30	56.80	50.67
Intensity (Gap) of poverty (%)	25.13	34.82	28.98
Depth (Severity) of poverty (%)	6.32	12.12	8.40

Figures in parentheses are percentages of column number of household

Table 3: Comparison of poverty indices between male and female headed households

Poverty indices	Means of variables		Mean difference	SE of difference	df	t-value	Level of significance
	Gender	Values					
Household monthly income	Male	31568	10922	4150.05	68.00	2.63	**
	Female	20646					
Household size	Male	5.29	0.35	0.38	68.00	0.92	NS
	Female	4.94					
Total household monthly expenditure	Male	61549	26484	10741.03	68.00	2.47	*
	Female	35065					
Mean per capita household expenditure	Male	12219	4066	1206.84	68.00	3.37	**
	Female	8153					
Mean per capita household income	Male	6360	1552	545.78	68.00	2.84	**
	Female	4808					
Intensity of poverty	Male	25.13	-9.69	-4.35	68.00	2.23	*
	Female	34.82					
Dept of poverty	Male	6.32	-5.8	-6.67	68.00	0.87	NS
	Female	12.12					

* = Significant at ($p \leq 0.01$), ** = Significant at ($p \leq 0.05$); NS = Not Significant at ($p > 0.05$)

Socioeconomic characteristics affecting poverty levels of households:

A regression analysis was carried out to determine the effect of selected socioeconomic characteristics of the household heads on their levels of poverty. This was done to enable the test of hypothesis which states that the selected socioeconomic variables of the respondents do not have significant effect on their poverty levels. The result is shown in Table 4.

Three functional forms were tested, namely linear, semi log and double log functions. The linear functional form with the highest number of significant variables and adjusted R was chosen as the lead equation and therefore presented in the table as well as used for further discussion. The significant variables were level of formal education, family size, farm size and household monthly income. The coefficients of these variables had signs which were in consonance with *a priori* expectations. So, with the exception of household/family size the coefficients of other three variables were positive.

The household/family size with negative coefficient implies that families with large household sizes had higher poverty incidence than those with smaller sizes. This is because, with fixed income, the resources of the household are stretched over a large number of people. Family planning could be a way out for

Table 4: Linear regression analysis to determine the factors that influence the poverty incidence on the households

Factors	Coefficients	SE	t-stat.	p-value
Intercept	9.4790	1.4844	6.3859	2.6E-08**
Gender	0.1011	0.4463	0.2265	0.821579
Age of respondents	0.0068	0.0266	0.2561	0.798744
Level of formal education	0.0919	0.0355	2.5841	0.039887*
Farm size	0.6970	0.3358	2.0755	0.049694*
Family size	-0.3116	0.1193	-2.6122	0.011312*
Household Monthly income	0.0004	0.0000	8.6572	3.28E-12**
Household Monthly savings	0.0017	0.0016	1.1085	0.06714
Farming experience	0.0155	0.0368	0.4224	0.674243
F calculated	12.952	-	-	-
R ²	0.629	-	-	-
Adjusted R ²	0.581	-	-	-

* and ** imply significant at $p \leq 0.05$ and 0.01, respectively

people to improve their standards of living. Alternatively, diversification of the income bases of the household could enable them generate sufficient incomes to cater for their needs.

Farm size which had positive coefficient signifies that with larger farm sizes, families could generate more income to cater for their needs. However, with the limited income of the farmers, their ability to cultivate farms of large sizes is limited. To do so require mechanization and this is beyond the capacity of the farmers. Financial assistance in the form of affordable credit facilities and the liberalisation of tractor hiring services are required.

The household income has direct bearing on their level of wellbeing as well as poverty. Any measure aimed at increasing the household income such as access to production credit, ease of access to land for increased farm size, input subsidy and timely supply, provision of storage facilities will bail the farm households out of poverty.

Education no doubt is a panacea to more income opportunities. With education, farmers are able to manage their resources better as well as adopt better techniques of production. This includes ability to combine factors of production more efficiently leading to input utilization at least cost levels. To bring about improved education for farmers, particularly those without formal education, on farm adult literacy programme should be mounted for farmers at little or no cost on their part.

Other variables considered, though not significantly related to poverty levels of the households were age, gender, monthly savings, farming experience of household heads.

CONCLUSION

Poverty involves not only the lack of the necessities of material well-being but the denial of opportunities for living a tolerable life. Life can be deprived of knowledge and communication, which can rob of dignity, confidence and self respect of man. The study which focused on the estimation of poverty gap between female and male headed farm families in Ukwani local government area of Delta State showed that the farmers were characteristically smallholders with about 50% of males and 83% of female household heads having not >1.50 ha of farm. It was found that poverty was wide spread among the farm households especially the female headed ones. It was further noted that four variables were significantly related to the household poverty levels namely level of formal education, family size, farm size and household monthly income.

RECOMMENDATIONS

Arising from findings of the study, the following recommendations were made:

- Family planning should be encouraged among the rural households so that they produce only the number of children they can take care of to guarantee them minimum acceptable standard of living

- The difficult accessibility to land for large farm sizes and permanent cultivation particularly among female household heads can be addressed if the current land tenure system as practiced in the study is reviewed to enable have farmers easier access to sufficient farm land
- Rural non farm employment opportunities should be encouraged to enable the households diversify their income bases. This will enable them engage in other income activities to support the income generated from the farm
- Although majority of the respondents indicated their desirability for credit, only a few have had access to such facility. It is therefore recommended that deliberate policy should be put in place to guarantee them easier and affordable access to production credit. Among such policy is that which will encourage the formation of cooperative societies amongst them. In addition, governments should grant the farmers input subsidy and ensure timely supply of such inputs and provision of storage facilities so as to bail them out of poverty
- To bring about improved education for farmers, particularly those without formal education, on farm adult literacy programme should be mounted for farmers at little or no cost on their part

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