

Farm Households Livelihood Diversification and Poverty Alleviation in Giwa Local Government Area of Kaduna State, Nigeria

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Abstract

This study was undertaken to determine the effect of livelihood diversification on poverty alleviation in Giwa Local Government Area of Kaduna state, Nigeria. The study utilized primary data collected through a questionnaire administered to 100 respondents selected using purposive and random sampling procedures. Data were analyzed using simple descriptive statistics, the FGT poverty model and Tobit regression model. The result of the FGT poverty model revealed that the incidence of poverty among the farming households was 30%, implying that 70% of the farm households were not poor. The result of the Tobit regression showed that livelihood diversification was significant at 1% probability level and was negatively related to the poverty level of the farmers. This implies that a farming household head who engages in a number of livelihood activities has a lower likelihood of being poor. The increase in the number of livelihood activities increases the income of the farmers and invariably their purchasing power and welfare. It is therefore recommended that awareness and skills acquisition training programmes be established at the grass roots level by the local government authority to ensure that farmers are practising farming along with a wide range of income generating activities to improve their wellbeing.

Keywords: Head count, Income, Poverty line, Likelihood.

1. Introduction

The contribution of non-agricultural activities to household income in the developing world in general and Sub-Saharan Africa in particular is substantial. Local non-farming income contributes between 30 to 40 % of rural household income in the developing world (Haggblade *et al.*, 2007). Various studies have shown that while most rural households are involved in agricultural activities such as livestock, crop, or fish production as their main source of livelihood, they also engage in other income generating activities to augment their main source of income (Abimbola and Oluwakemi, 2013).

Diversification has been defined by Kimenju and Tschirley (2008) as ‘the number of economic activities an economic unit is involved in and the dispersion of those activities’ shares in the total economic activity of the unit. The focus on livelihood is relevant, in particular with the discussion on rural poverty reduction. With prevalent poverty in most rural areas, rural development has been an important policy goal for many developing countries, and large-scale, structural reform measures have been taken to this end (Hyewon, 2011). The growing interest in research on rural off-farm and non-farm income in rural economies shows that rural people’s livelihoods are derived from diverse sources and are not as overwhelmingly dependent on agriculture as previously assumed (Gordon and Craig, 2001). Non-farm local activities include all economic activities in rural areas except agriculture, livestock, fishing and hunting. It includes all off-farming activities, processing, marketing, manufacturing, wage and casual local employment in the rural villages (Agu, 2013).

Most rural populations in Africa have been suffering from poverty and environmental degradation. Maintenance of a diversified resource base is a prerequisite for adaptation to climate variability as diversified livelihood systems allow indigenous farming communities to draw on various sources of food and income. In doing so, they can diffuse the risks of vulnerability to climate change (Macchi *et al.*, 2008). Poverty is a problem affecting every nation of the world (Chen and Ravallion, 2010). The reduction of poverty is the most difficult challenge facing any country in the developing world where on average, the majority of the population is considered poor. In Nigeria, the number of those in poverty has continued to increase (Lawal *et al.*, 2011). Despite the various efforts of government to reduce the incidence of poverty through different poverty alleviation programmes and strategies and the quest to be one of the 20 largest economies by the year 2020, Nigeria continues to be one of the poorest countries in the world (Adepoju, 2012). Its incidence rose from 27.2% in

1980 to 42.7% in 1992 and 69% in 2010 (NBS, 2012). Nigeria has been ranked 153rd with human development index of 0.471 in 2013 UNDP Human Development Index despite moving a step up from the 2011 rating, portraying the country among the poorest countries in the world, majority of whom resides in the rural areas with farming as their primary occupation.

Agriculture is the main source of livelihood in Nigeria, especially in the rural areas and is plagued with various problems (Abimbola and Oluwakemi, 2013). As a result, most of the rural households are poor and are beginning to diversify their livelihoods into off and non-farm activities as a relevant source of income. The farm sector employs about two-thirds of the country's total labour force and provides a livelihood for about 90% of the rural population (IFAD, 2009). Despite agriculture being the major occupation, non-farm sector plays several roles in the development of the rural sector (Lanjouw, 2001). There is growing literature on livelihood diversification in Nigeria (Agu, 2013; Awotide, Kehinde and Agbola, 2010; Okere and Shittu, 2013; Dose, 2007; Iiyama, 2006). However, empirical information on the effect of livelihood diversification with particular interest on poverty reduction is limited, especially in Kaduna State. In view of the foregoing, this study was carried out to:

- I. Determine the poverty status of the farm households in the study area.
- II. Determine the effect of livelihood diversification on the poverty level of farm households in the study area.

2. Materials and Methods

2.1. Description of the study area

The study was conducted in Giwa Local Government Area (LGA) of Kaduna State, Nigeria. The LGA lies between latitudes 11.20 and 11.50⁰N and longitudes 7.0 and 7.5⁰E and has a land area of 3, 350km². It is located northwest of Zaria in the Northern Guinea Savannah and about 640m above sea level. The Local Government Area is bounded in the North by Funtua and Malumfashi Local Government Areas of Katsina State and on the West and South by Birnin Gwari and Igabi Local Government areas of Kaduna State respectively. The Local Government had an estimated population of about 286, 427 in 2006 (NPC, 2006). It is estimated that the population will increase to 359,752 by 2014 based on the National Population Commission (NPC) annual growth rate of 3.2%.

2.2. Sampling procedure and sample size

A two stage sampling technique was used in the study. The first stage involved a random sampling of five villages out of the twenty villages in Giwa Local Government Area. The selected villages were Shika, Galadimawa, Giwa, Gangara and Guga. The second stage involved purposive sampling of 20 diversifying farmers from each of the five selected villages to give a sample size of 100 diversifying farmers. The use of purposive sampling technique is justified on the basis that the study is concerned with only diversifying farmers and since there is no reliable data on the sample frame of diversifying farmers in the study area, purposive sampling technique was employed in the selection of the diversifying farmers.

2.3. Method of data collection

Primary data were used for this study. The data were collected from the respondents with the aid of a well-structured questionnaire. The data collected included the socio-economic characteristics of the farmers such as; age of respondents, farming experience, educational status of the respondents, household size, number of livelihood activities engaged in by a given farm household head, marital status, farm size, access to credit, membership of cooperative, number of extension contacts, reasons for diversification, food and non-food expenditure for determining the poverty status of farmers.

2.4. Analytical technique

Analysis of data collected from the field was done using FGT poverty model and Tobit regression model.

2.4.1. FGT poverty model (Foster, Greer and Thorbecke model)

This was used to determine the poverty status of the farmers. The Foster, Greer and Thorbecke (FGT) measures of poverty are widely used because they are consistent and additively decomposable (Foster *et al.*, 1984). Poverty head count index, poverty gap index and squared poverty gap index were computed to measure the incidence, depth and severity of poverty of the fish processors. A relative poverty line was constructed based on the Mean Per Capita Household Expenditure (MPCHE) of the farmers. The General Foster, Greer and Thorbecke (FGT) poverty index ($P_{\alpha i}$) can be expressed as:

$$P_{ai} = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^\alpha \dots \dots \dots (1)$$

When:

$$a = 0, \text{ i.e poverty incidence or head count } P_0 = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^0 = \frac{q}{n} \dots \dots (2)$$

$$a = 1, \text{ poverty gap or depth } P_1 = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^1 \dots \dots \dots (3)$$

$$a = 2, \text{ poverty severity } P_2 = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^2 \dots \dots \dots (4)$$

α = degree of poverty aversion (0, 1 and 2)

n = number of farmers in a group

q = the number of poor farmers

z = poverty line (two-third of Mean Per Capita Household Expenditure (MPCHE) of the farmers)

2.4.2 Tobit regression model

The Tobit model is an extension of Probit model and it is one of the approaches dealing with the problem of censored data (Johnston and Dandiro, 1997). This is a hybrid of the discrete and continuous models. The use of Tobit model is conceptually preferable to conventional linear regression models because parameter estimates from the former overcome most weaknesses of linear probability models namely: providing estimates which are asymptotically consistent and efficient (McDonald and Moffit, 1980).

Tobit analysis was employed in the analysis of the data collected to achieve objective ii of the study. The Tobit model is expressed based on Tobin (1958):

$$y_i = y_i^* = X_i\beta + e_i \dots \dots \dots (5)$$

$$y_i = 0 \text{ if } y_i^* \leq 0 \dots \dots \dots (6)$$

$$y_i = y_i^* \text{ if } y_i^* > 0 \dots \dots \dots (7)$$

$i = 1, 2, 3 \dots \dots \dots n$

Where,

y_i = observable but censored variable measuring both the probability of being poor and intensity of poverty

y_i^* = latent variable indicating that adoption may or may not be directly observable. Hence, poverty is observed if $y_i^* > 0$ and unobservable if $y_i^* \leq 0$

X_i = set of explanatory variables

The independent variables were specified as follows:

X_1 = age of the respondents (years)

X_2 = farming experience (years)

X_3 = educational status of the respondents (years of formal education)

X_4 = household size (number of individuals in a given household)

X_5 = livelihood diversification (number of livelihood activities engaged in by a given farm household head) which is the variable of interest in this study

X_6 = marital status (Married =1, Single =0)

X_7 = farm size (ha)

X_8 = access to credit (amount of credit obtained)

X_9 = membership of cooperative (years of membership of cooperative)

X_{10} = extension (number of extension contacts)

β = vector of Tobit maximum likelihood estimates

e_i = independently distributed error term

NB: Ceteris paribus, a higher value of explanatory variable with positive coefficient is expected to increase the probability of being poor and, for the poor farmers, the extent to which they are poor and vice versa.

3. Results and Discussion

3.1. Poverty status of the farmers in the study area

3.1.1. Determination of poverty line

The result in Table 1 gives a clear presentation of the estimation of the poverty line that was used to determine the poverty status of the farmers in the study area. The poverty line formed the basis for further analysis. The Foster-Greer-Thorbecke (FGT) class of poverty measures was employed to estimate the poverty status of the farmers in the study area. Following the adoption of Foster, Greer and Thorbecke measures, households' total expenditure was used to determine households' poverty status. The result presented in Table 1 shows the households food and non-food expenditure, total expenditure, Per capita and mean per capita household expenditure and the poverty line. The poverty line was constructed as two-thirds of the mean per capita household expenditure (MPCHE) of all households. This approach has been used by several researchers and institutions (NBS, 2005; Oni and Yusuf, 2008) as a measure of welfare. Households were then classified into their poverty status based on the poverty line.

Hence, non-poor households were those whose per capita expenditure was above or was equal to two-third of the mean per capita expenditure of all households while those whose per capita expenditure was below two-third of the mean per capita expenditure were classified as poor. Based on this, the poverty line constructed as two-third of the mean per-capita expenditure of all the households was ₦13039.1. This implies that households whose monthly per capita expenditure fell below ₦13039.1 were classified as poor while households whose per capita expenditure equaled or was above the poverty line were classified as non-poor.

Table 1: Determination of poverty line

Items	Amount (₦/month)
Household food expenditure	1680500
Household non-food expenditure	15493100
Household total expenditure	17173600
Per capita household expenditure (PCHE)	1955859.82
Mean Per capita household expenditure (MPCHE)	19558.6
2/3 MPCHE (Poverty line)	13039.1

3.1.2. Poverty indices of the farm households

The result presented in Table 2 shows the values for the poverty measures, (poverty headcount (H), poverty gap and severity of poverty). Based on the poverty line, households were classified into their poverty status as either non-poor or poor as presented in Table 2. The headcount index (incidence of poverty) computed for the study area was 0.30 implying that the proportion of the farming households whose per capita expenditures fell below the poverty line was 30%. The Table shows that 30% of the farm households in the study area are poor while 70% are non-poor. The result is in line with the findings of Adepoju and Obayelu (2013) on livelihood diversification and welfare of rural households in Ondo state, they reported that the poverty line was at ₦2,752.03 (monthly), 42.7% of households were poor and 57.3% were non-poor. Poverty gap (depth) represents the depth of poverty, it is the mean distance that separates the population from the poverty line. Poverty gap was 0.27, and this implies that the poor rural households require 27 % of the poverty line to escape from poverty group. It is a measure of the poverty deficit of the entire population. Poverty severity value was 0.11, this implies that the severity of poverty among the poor households in the study area was 11%. The poverty severity takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor. The result conforms with the findings of Asogwa *et al.* (2012) who reported a poverty gap of 0.27 and poverty severity of 0.15 in a study on poverty and efficiency among farming households in Nigeria.

Table 2: Poverty measures for the farm households

Items	Results
Poverty line (₦)	13039.1
Poverty headcount	0.30
Poverty gap	0.27
Poverty severity	0.11
Poor (%)	30
Non-poor (%)	70

3.2. Effect of livelihood diversification on the poverty level of farm households

The Tobit regression model was used to estimate the determinants of poverty level of the farm households with particular interest on the influence of livelihood diversification on their poverty level. The result presented in Table 3 shows that Sigma was significant at the 1% level of probability, which means the model is a good fit. Household size, livelihood diversification and access to credit were the only significant variables out of all the independent variables. The coefficient of household size was significant at 1% level and shows positive relationship with the risk of being poor. The size of the farming households increases the probability of a household being poor. This implies that poverty is increased by higher household size and this could be attributed to increase in the needs of the household as their household size increases. The result is in line with the findings of Awotide *et al.* (2010) on poverty and rural livelihood diversification among farming households in southwest, they reported that the increase in size of the farming households increases the probability of a household being poor. This also agrees with the study of Adepoju and Obayelu (2013) who reported that household size was found to be significant at 1% probability level and was positive. It also conforms with the study of Oluwatayo (2009) on poverty and income diversification among households in rural Nigeria, he reported that the coefficient of household size was positive and significant at 5% probability level.

The number of livelihood activities engaged in by the farmers in the study area was significant at 1% probability level and negatively related to the poverty status of the farmers. This implies that a farming household head who engages in a number of activities in the study area has a lower likelihood of being poor. This is on the premise that increase in the number of livelihood activities increases the income of the farmers arising from the different income generating activities and also, increase in the number of livelihood activities reduces the risk of low income generation associated with single investment on the event of adverse weather condition such as drought or flood thereby affecting yield and price fluctuation. In other words, livelihood diversification safe guards the farmers against the danger of single investment in a worst case scenario of having total crop failure. In essence, livelihood diversification increases the income sources of the farmers and invariably their purchasing power and thereby making it possible for the farming households to meet their basic needs in terms of food, shelter, clothing, education, health care

e.t.c. This result is also in line with the findings of Adepoju and Obayelu (2013) that the livelihood activities engaged by the household head was found to be significant at 5% level and was negative. The coefficient of access to credit was significant at 5% level and negatively related to the poverty status of the farm households. This implies that access to credit in the study area reduces the likelihood of a household being poor and this is because access to credit gives the farmers the opportunity of enhancing their production capacity through purchase inputs such as improved seeds and fertilizer. This is not surprising, as credit can reduce liquidity constraints and increase the capacity of households to start off-farm businesses. This is in line with the findings of Babatunde and Qaim (2009) who reported that access to credit has a positive influence on income diversification. Surprisingly, land area (farm size) owned by household heads was not significant.

Table 3: Tobit model estimates of the determinants of poverty level of the farm households

Variable	Coefficient	Standard error	t-value
Constant	-6.360	1.331	-4.778
Age	8.381	5.982	1.401
Education	-2.157	3.969	-0.543
Household size	5.200*	0874	5.951
Farming experience	6.848	5.276	1.298
Livelihood diversification	-0.014*	0.005	-2.845
Association	5.577	6.159	0.906
Extension	-4.703	11.013	-0.427
Farm size	7.992	6.120	1.306
Credit	-7.583**	3.439	-2.205
Sigma	1.252***	1.117	10.700

*Significant at 1% level

**Significant at 5% level

***Significant at 10% level.

4. Conclusion

Based on the findings of this study, it can be concluded that 30% of the farm households were poor, implying that 70% of the farmers were non-poor. Household size, livelihood diversification and access to credit significantly determined the poverty status of farming households in the study area. Livelihood diversification by the farm households decreased the farm households' probability of being poor implying that livelihood diversification offers an opportunity for alleviating poverty among the farm households in the study area through multiple streams of income as a result of diversification. Therefore, it is recommended that awareness and skills acquisition training programmes especially for women and youths should be established at the grass roots level by the local government authority to ensure that farmers are practicing farming along with a wide range of income generating activities to improve their well being. The acquisition of skills by women and youths in the study area will be instrumental in the alleviation of poverty in the study area because these are the most vulnerable groups given that most women are resource poor and most youths are unemployed. The training programme can include activities such as the processing of agricultural products, extraction of oil from groundnuts, production of detergents, weaving, baking amongst others for women and poultry farming, fish farming, ram fattening, GSM repairs, upholstery production, shoe production and so on for youths in the study area.

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