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Transforming Smallholder Farming in Nigeria through Off-Farm Employment

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Transforming Smallholder Farming in Nigeria through Off-Farm Employment

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ABSTRACT

Poverty is one of the Nigeria's policy challenges stalling all efforts to develop rural areas and transform agriculture. Although, poverty is an endemic problem in Nigeria, available evidence shows that rural areas in the country are the most affected. This study advocates off-farm employment for poverty reduction in the rural areas. An empirical investigation was carried out among farming households in Kwara State, Nigeria to analyze the potentials of off-farm employment in poverty reduction. Kwara state is among the six poorest states in Nigeria. A four-stage sampling technique was employed to select 200 farming households used as sample for the study. Three analytical tools including: descriptive statistics, regression analysis, and Foster, Greer and Thorbecke (FGT) classes of poverty measures *were used for data analysis. The result of the* study *shows that a typical household comprised more than 10 persons with a male household head. The average age of the household heads was 45.5 years. 73.3% practiced farming with off-farm work. Poverty analysis was disaggregated into age, marital status, household size and primary occupation. Poverty incidence and severity are more among households with farming as the sole occupation. Households combining off-farm jobs with farming are non-poor. Age, literacy level, household size and occupation were the determinants of off-farm employment of the farming households. Policy options which will increase rural productivity, reduce rural poverty and encourage youth participation in rural economy were suggested.*

Key Words: Off- Farm jobs, Farming households and Poverty.

Introduction

Poverty is multifaceted and does not subject itself to a single definition, but in a nutshell, it refers to the inability to attain minimum standard of living. These standards include adequate food, shelter, portable water, health care, education and employment opportunity (United Nations Human Development Report (UNHDR 2014). Access to most of these facilities is largely market determined, an individual or household without enough income to meet the minimum levels of these needs in a given society is generally said to be poor.

Poverty is a world-wide phenomenon, approximately one sixth of the world's population is living in condition of severe poverty at less than US$1 a day and roughly half are living on less than US$2 a day (International Labour Organization (ILO) 2008). However, poverty is said to have a rural face, 75 percent of the world poor are found in the rural areas in the developing countries (UNHDR) 2014). Nigeria is the worst hit in Africa, it's the third country with the largest population of the world poor, about 112 million people out of 173million Nigerian population are poor (World Bank President 2015: Bureau of Statistics 2013). Nigeria, according to the Studies (World Bank 2014 and 2008, Rahji 2005 and Akintola and Yusuf 2001) have shown that farming households have the highest levels of poverty in the country and this has been considered as one critical factor retarding agricultural development in Nigeria.

The challenge of food insecurity and social unrest, the ultimate result of rural poverty has made Nigeria Governments to embark on poverty reductions programmes and activities including; National Accelerated Food Production Project (NAFPP) in 1974, the World Bank Assisted Agricultural Developments Projects, (ADPS) 1975; Operation Feed the Nation (OFN) 1976;

others are the National Land Development Authorities (NALDA) 1991, the Special Foods Security Programme (SFSP) 2001, and the Agricultural Transformation Agenda 2012. However, the efforts have not yielded satisfactory results. The incidence of poverty is still increasing to the extent that the Vice President of the country (2015) has to raise alarm and called for immediate arrest of the ever increasing poverty in Nigeria.

In response to the clarion call by the Nigeria Federal Government to find a lasting solution to rural poverty in the country and the call for paper on Transforming small holder agriculture by the African Association of Agricultural Economists (AAAE), this study therefore , assessed the potentials of off-farm employment in reducing poverty among farming households in Nigeria. Off-farm employment is defined as the participation of individuals in remunerative work away from a plot of land, which can be seen to play a progressive role in sustainable development and poverty reduction, especially in rural areas (ILO 2008). The study highlighted; poverty status of the farming households without and those with off-farm economic activities, the impact of off-farm economic activities on the poverty status of the farming households and factors influencing participation in the off-farm employment. Some useful economic suggestions that would benefit the farming households, policy makers, and the government were recommended.

Analytical Framework; Measurement of poverty involves establishing a poverty line which will distinguish the poor from non poor (Townsend and Kennedy, 2004)**,** poverty depth which focuses on the well-being of those below the poverty line and, what and how to transfer to them so that changes among better-off people do not affect measured poverty (Sen 1976). Severity of poverty which focuses on the distribution of the poor below the poverty line to guide the policy makers in the distribution of the wealth to be transferred from the better-offs also has to be established. **Foster, Greer and Thorbecke (FGT 1984) measure of poverty** is commonly

used to capture the indices. The measure is generally written as:

$$P_{\alpha} = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{Z}\right)^{\alpha}, (\alpha \geq 0) \text{.....(1)}$$

α represents a measure of the sensitivity of the index to poverty, the poverty line is represented by *z*, while *Gi is* the poverty gap for individual N is number of respondents. *T*he indices are further explained below;

Headcount index: (P_0) which measures the proportion of the population that is poor is denoted by,

$$P_0 = \frac{1}{N}\sum_{i=1}^{N} I\left(Y_i < Z\right) \text{.....(2)}$$

Here, $I\ (Y_i < Z)$ is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. So if expenditure (*yi*) is less than the poverty line (*z*), then $I(Y_i < Z)$ equals to 1 and the household would be counted as poor. NP is the total number of the poor.

Poverty gap index: (P_1) which measures the extent to which individuals fall below the poverty line is presented as;

$$P_1 = \frac{1}{N}\sum_{i=1}^{N}\frac{G_i}{Z} \text{.....(3)}$$

Poverty severity index (Squared poverty gap): that measures the extent of inequality among the poor. It is expressed as:

$$P_2 = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{Z}\right)^{2} \text{.....(4)}$$

These measures are also adopted for poverty analysis in this study

MATERIALS AND METHODS

The study was carried out in Kwara state, Nigeria. The State extends from latitude 7^0 45'N and $9^0$30'N on its Southern hemisphere and longitude 2^0 30'E and $6^0$25'E on the Southern eastern reach. The state comprises of sixteen (16) Local Governments areas (NPC, 2007). The state has a total population of about 2.4 million people, 80% of which resides in rural areas. 70% of the rural populace is smallholder farmers (Kwara State Diary, 2006). The state is the gateway between the northern and southern regions; it has a good number of the three major ethnic groups in Nigeria. The socioeconomic heterogeneity and location factors tend to encourage the development of off-farm activities. The nationwide living standard measurement survey conducted in 2004 showed that Kwara State is among the six poorest states in Nigeria in terms of prevalence of undernourishment and income poverty (NBS, 2005).

The population for this study comprises of farming households in Nigeria. A sample of 200 respondents was selected from Kwara state farming households using a four- stage sampling procedures. In the first stage, the state made up of sixteen local government areas (LGAs) was divided into four zones based on climatic and vegetation characteristics. One LGA was randomly selected from each zone including; Edu, Pategi, Ilorin east and Asa to make a total of four LGAs. This was followed by another random selection of five villages from each of the LGAs to make a total of twenty villages. Ten households were then chosen from each village using systematic random sampling procedures by selecting every fifth household for interview.

Data collected through structured questionnaire included the socio-economic information of respondents with on-farm and off-farm employment, various institutional and contextual variables. On-farm employment covers commodity trading, subsistence production and

processing, both valued at local market prices. Off-farm activities includes civil service, bricklaying, barbing, woodwork like carving and carpentry, saw milling, leather works, bicycle – repairing, metal work, knitting, dressmaking, dyeing, retailed trading, transport operation, food processing and other service jobs.

Three analytical techniques were used for this study including; descriptive statistics; Foster, Greer and Thorbecke (FGT) model of poverty decomposition and regression analysis. Descriptive statistics was used to describe the socio-economic characteristics of the farming household heads and the types of economic activities the farming households engaged in. The FGT model of poverty decomposition used by Baiyegunhi and Fraser (2010) was used to determine the incidence, depth and severity of poverty of the farming households in the study expressed as;

$$P_{\alpha} = \frac{1}{n}\sum_{i=1}^{m}\left(\frac{z - y_i}{z}\right)^{\alpha}, \alpha \geq 0 \quad \text{.....(7)}$$

Where;

Z=Poverty line

m =Number of households below poverty line

n =Number of households in the reference population/total sampled population

y_i= Per adult equivalent income of i^{th} household

α =Poverty aversion parameter

z- y_i =Poverty gap of the i^{th} household

$\frac{z - y_i}{z}$ = Poverty gap ratio

The headcount index was obtained by setting $\alpha = 0,$ the poverty gap index $\alpha = 1,$ and squared poverty gap index $\alpha = 2$. Three poverty lines were compared for this study including 1US$ per day, 2US$ per day and two-third mean household expenditure as used by (Ravallion, 2009). Any household member whose daily estimated income falls below the estimated measures are considered poor and those whose income falls above are non-poor. Finally, the per capita poverty status was categorized to be poor, becoming poor and non-poor. Generally, an individual who is poor based on all the measures is considered poor, while those who are poor based on one or two measure(s) are said to be becoming poor, and those that are non-poor based on all the measures are said to be non-poor .

Regression analysis was employed to determine the factors influencing household's engagement in off-farm economic activities and the effect of off-farm employment on income (poverty status) of the farming households engaging in it. The equations in implicit form are represented below.

To determine factors influencing household's engagement in off-farm employment

Lbrof f = f (Y_1*, Y_2, Ahz, Ahh, Yrsh, buscst, U)*…….... (5)

To determine the effect of off-farm employment on (poverty status.

Pty = *f (Lbr, lbroff, U)*..…….. (6)

Table 1: List of abbreviations and descriptions

Abbreviations	Descriptions	Measurements
Lbroff	Household head in off-farm employment	Man-days
Lbr	Household head in on-farm employment	Man-days
Pty	Poverty status	
Y_1	Total income of on-farm household	Naira
Y_2	Total income of off-farm household	Naira
Ahz	Adjusted household size	Numbers
Ahh	Age of household heads	Years
Yrsh	Years of schooling	Years
Buscst	Business cost	Naira
U	Error term	

Source; Survey data

Different functional forms were estimated for the purpose of capturing the right relationship existing between the dependent and independent variables and the lead equations based on econometric and other criteria were selected.

Adult equivalents were generated following Nathan and Lawrence (2005),

$AE = 1 + 0.7 (N_1 – 1) + 0.5 N_2$ …… (8)

Where

AE = Adult Equivalent

N_1 = Number of adults aged 15 years and above

N_2 = Number children aged less than 15 years.

For the purpose of this study, 1USD has the equivalent of ₦165

Results and Discussion

Socio-economic Characteristics of the Farming Households

Table 2: Socio-Economics of Farming Households

Description	Number of Household members (N=120)	Percentage
Gender		
Male	99	82.5
Female	21	17.5
Marital status		
Married	96	80
Single	15	12.5
Separated	5	4.2
Divorced	4	3.3
Age of household head in years		
<20	0	0
21-30	12	10
31-40	34	28.3
41-50	49	40.8
51-60	14	11.7
>60	11	9.2
Highest level of education		
No formal education	20	16.7
Quranic	2	1.6
Primary	44	36.7
Secondary	36	30
Tertiary	18	15
Religion	8	6.7
Christianity	112	93.3
Islam	0	0
Others		
Primary occupation		
Farming	54	45
Civil servant	32	26.7
Trading	24	20
Others	10	8.3
Secondary occupation		
Civil servant	35	39.7

Fishing/hunting	14	15.9
Trading	15	17.2
Dressmaking	4	4.5
Woodwork	8	9.1
Barbing	6	6.8
Hairdressing	6	6.8
Off-farm employment		
Yes	88	73.3
No	32	26.7

Source; Survey data

Table 2 shows that 82.5% of the sampled farming households were male headed. The mean age was 46 years with an age interval of 21-70 years. The Table also reveals that 80% of the respondents were married, 73.3% were engaged in off-farm employment in addition to farming while 26.7% were engaged solely on farming. More than 80% had education of various levels, 39.7% were civil servants, 15% fishing/ trading, 17.2% trading, 4.5dressmaking,9.1% woodwork, 6.8% barbing and 6.8% hairdressing.

Table 3: Distribution of the households Off-farm Employment

Economic Activity	Average Monthly Income (₦)	Proportion (%)
Civil service	34803.93	41.8
Fishing/hunting	7681.26	9.2
Trading	12489.75	15.0
Dressmaking	6854.56	8.2
Woodwork	9586.95	11.5
Barbing	5439.40	6.5
Hairdressing	6472.72	7.8
Total	83328.57	100

Source; Survey data

Table 3 shows the proportion of economic activities with respect to their mean incomes. Civil servants earned highest 42% followed by trading 15%, woodwork 11.5%,fishing/hunting had 9.2%, dressmaking 8.2%, hairdressing 7.8% and lastly barbing 6.5%,

Table 4: Determinants of Employment of the Farming Households in Off-farm work

Variables	Linear	Semi log	Exponential
(Constant)	368.716***	488.927***	-41.071
	(7.840)	(3.790)	(-2.510)
GENDER	66.827***	81.181**	-1.39E-021
	(3.370)	(2.90)	(-1.590)
ahz	4.806*	10.539***	0.002
	(1.750)	(3.410)	(0.550)
yrsh	-7.734***	-330.338**	-1.62E-107
	(-2.990)	(-3.050)	(-6.640)
buscst	-0.075***	2.711**	1.242**
	(4.130)	(3.450)	(3.150)
Y_1	0.004***	0.000*	0.001**
	(9.160)	(1.690)	(3.060)
R^2	0.677	0.411	0.127
			0.179
Adj R^2	0.654	0.312	

Source; Survey Data
N.B; the values in parenthesis are absolute value of t-ratio; (***) at 1%, (**) at 5%, (*) at 10%

The linear function was selected as the lead equation in Table 4 because it gave the highest R^2 value, adjusted R^2 value, F-ratio and the maximum number of significant variables. The value of R^2 showed that the explanatory variables accounted for 67.7% in the variation of the dependent

variable (off-farm employment). Gender, adjusted household size, business cost, years of schooling and farm income were the major factors influencing the employment level of farming households in off-farm work in the study area. Gender, adjusted household size and farm income were positively significant while business expenses and years of schooling were negatively significant to the level of off-farm employment. Other things being equal one would have expected a positive relationship between level of education and off farm – employment because most (62%) of the respondents were well educated. However; there was a significant but negative relationship implying low off-farm employment with higher level of education. The explanation to this might be because people with high education join civil service. More importantly might be because the available off-farm works such as sewing, barbing, blacksmithing woodwork and foods processing and others are not lucrative or profitable enough to attract the interest of the educated youths (who were the majority (79%). Most of these jobs need regular and constant supply of electricity, standard storage facilities, and good hospitals in case of accidents and good portable water which are lacking in the study area as in most Nigeria rural areas. The coefficient of gender is positive and significant at 1% indicating that the more the males, the higher will be the likelihood of increase in the level of off-farm employment (man-days). This might be as a result of sampling error because there are more male headed households than females. It is also revealed that household size had positive and significant relationship with off-farm employment, meaning that, households with large members participate more in off-farm activities. The finding may also be pointing to the fact that child labor abuse may be high in the areas of study and this portends a bleak future for the children who probably were forced to hawk wares or assist adults in the off-farm activities at the expense of their education. The negative coefficient of business expenditure may be explained with the fact that

most of the respondents are poor and cannot meet up with the financial requirements of establishing a business. Farm income had positive relationship with off-farm employment at 1% level of significant showing that respondents with higher income from farming activities are those capable of venturing into off-farm businesses or establishments. These findings corroborate Bessant et al (2002) and Babatunde &Qaim (2010) that off farm employment depends on household's wealth and education.

Poverty Profile of the Farming Households

Table 5 presents the poverty profile of the farming households that have been disaggregated based on five parameters including: age group, household size, marital status, education level, and primary occupation.

Table 5: Poverty profile of respondents based on Socio-Economic characteristics

Parameter	Group	P_0	P_1	P_2
Age	21-40years	0.75‡	0.26	0.14
	41-60years	0.17	0.04	0.01
Marital status	Single	0.20	0.05	0.02
	Married	0.43	0.12	0.04
	Divorced	0.32	0.04	0.03
	Widowed	0.66‡	0.14‡	0.07‡
Education level	No formal	0.80‡	0.28‡	0.14‡
	Primary	0.56	0.13	0.07
	Quranic	0.50	0.18	0.08
	Secondary	0.53	0.19	0.08
	Tertiary	0.47	0.16	0.06
Household size	1-5	0.13	0.02	0.01
	6-10	0.39	0.14	0.05
	>10	0.79‡	0.21‡	0.07‡
Primary occupation	Farming and others	0.38	0.11	0.05
	Farming	0.73‡	0.20‡	0.10‡

‡,† Tests are from group total, denote significance at 1% and 5% respectively.

Table 5 revealed that households who depended solely on farming were poorer in terms of incidence, depth and severity, when compared to households in other occupations in the study. Following this group were the households without formal education, households headed by

widows and households with large sizes. Children' group within the age group of 21-40 also contribute to high incidence, depth and severity of poverty in the study area. This result confirms the findings of earlier studies (UNHD 2007, World Bank 2005, and Anyawu 2005) on poverty profiles in Nigeria. The studies showed that the most susceptible groups to the effects of poverty are the farmers, illiterates, widows and children.

Table 6: Effect of Off-farm Employment and other socio-economic factors on the Level of Income (Poverty Status) of Farming Households

Variables	Linear	Semi log	Exponential
(Constant)	0.179 (0.170)	5.623 (0.610)	-1.258 (-0.600)
GENDER	3.275* (1.890)	-0.410 (-0.300)	-1.098 (-1.450)
AHZ	2.085*** (3.990)	-8.726*** (-4.080)	-0.001*** (-2.460)
YRSH	-0.337 (-1.190)	-5.549 (-0.840)	-1.91E-109 (-1.170)
MARITSTAT	-2.097 (-1.480)	1.955** (2.210)	0.305** (2.310)
FMZ	0.601 (1.300)	0.668** (2.020)	0.161** (3.140)
Y_2	0.002*** (4.230)	0.005*** (3.440)	1.242** (3.150)
LBROFF	11.631** (1.970)	2.711*** (3.450)	1.006536 (2.970)
R^2	0.635	0.316	0.221
Adj R^2	0.626	0.299	0.194

Source; Survey Data

N.B; the values in parenthesis are absolute value of t-ratio; (***) at 1%, (**) at 5%, (*) at 10%

The linear function was selected as the lead equation in Table 6. The result revealed that off-farm employment, off-farm income, and adjusted household size, were significant factors reducing

poverty of the farming households in the study area. They all had a positive relationship with total income which show that the higher the levels of these variables the higher the level of income and the lower the level of poverty. However, the positive and high significant levels of the relationship between these variables and farmers' income showed that they contributed greatly to effective reduction of poverty in the study area. This finding justifies findings of Bayegunhi and Fraser (2010), Babatunde and Qaim (2010), ILO (2008) and De Janvry et al (2005) in their various studies on off-farm income and poverty reduction.

The positive and significant relationship between gender, household size and poverty reduction also justifies the importance of off-farm employment on income generation. Gender indicates number of man-hours put into off-farm activity. The positive relationship therefore justifies the expectation of the higher level of income and reduction in poverty level as the number of effective man-hour increases. Also in line with the apriori expectation, household size had positive and significant relationship with total income thereby, buttressing Glauben et al (2008) finding that large households have more hands to work on the farm as well as off-farm employment thereby increasing household income and lowering the level of poverty incidence.

Conclusion and Recommendations

This study examined the potentials of off-farm employment in poverty reduction among farming households in Nigeria using Kwara State as a case study. The result of the study showed that 73.3% of sampled households practiced farming with off-farm work. 62% of the households were educated. A typical household had a large family comprising more than 10 persons with a male household head having an average age of 45.5 years. Age, literacy level, household size and occupation were the determinants of off-farm employment of the farming households. Poverty incidence and severity were more among households with farming as the sole

occupation, the widows, households without any formal education and the children However, households combining off-farm jobs with farming are non-poor.

Policy Recommendations

Provision of Conducive Environment for Descent Off- Farm Employment

The significant but negative relationship between level of education and off-farm employment shows that educated youth are not actively engaged in rural economy probably because of the unprofitability nature of the available off-farm work in the study area which are not unconnected with absence or inadequate infrastructure in the area. Therefore, to stimulate the interest and encourage these young, vibrant and educated members of farming households to effectively participate in rural economy and drastically reduce rural poverty, there is an urgent need for Nigeria government to provide conducive environment for decent off-farm employment. This could be through renovation or provision of adequate and durable social infrastructure such as; regular and constant supply of electricity, pipe borne water, functioning hospitals and good roads among others in the rural areas. These facilities are surely beyond what the villagers could provide by themselves.

Resuscitation/Modification of Land Development Authority (LANDA)

LANDA was established in Nigeria in 1986 to clear, prepare, and distribute land for farmers in all LGAs in the states to increase farmers' productivity, reduce poverty and improve the standard of living. The Authority however, became moribund due to lack of fund. The agency had a laudable objective which if vigorously pursued will drastically reduce rural poverty and will encourage investment in off- farm economic activities.

The agency could be made self- sustainable if the government could provide initial capital for take- off in form of soft loan to be refunded after harvest when farmers pay for the service. More so, the agency could be merged with the state Ministry of Agriculture to eliminate cost of new establishment.

Formation of Farmers' Unions/Cooperatives

Farmers should endeavor to join farmers' unions or cooperatives to enable them benefit from economies of scale with respect to bank loans, farm inputs and farm produce sales which will improve their productivity and profit margins to enable them live well and invest in off-farm economic activities

Micro-Credit facility

The provision of micro credit facility to small scale women entrepreneurs in urban areas by some philanthropists and NGOs, a laudable gesture, should be extended to women most especially widows in the rural areas to enable them gain access to productive resources so as to improve their productivity, investment in off-farm economic activities and their standard of living.

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