Research Paper

Analysis of Rural Livelihood Diversification among Households in Nigeria: A Study of Benue, Cross River and Kaduna States

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ABSTRACT *This study analysed rural livelihood diversification among households in Nigeria. The result relied on data collected from a random sample of 540 households selected from three states (Benue, Cross River and Kaduna States) of the country. Analysis of data showed that most of the respondents were young (72.5 %), married (58.3 %) with fairly large household size (6). Educational analysis of respondents revealed that a large proportion (35.6 %) had no formal education with only about 15. 9 % educated up to tertiary level. Respondents distribution by poverty status revealed that there were more female – headed households in the study area than male –headed households with over half of those surveyed) (73.7 %) living on less than one dollar a day. The result of the Tobit regression model employed to ascertain the determinants of livelihood diversification showed that the coefficients of poverty status (2.9006), household size (0.4803), access to credit (0.0083) and gender (1.0759) were positive. This implies that any increase in the value of the coefficients of these variables have higher likelihood of influencing the estimated livelihood diversification index positively. However, the coefficients of years of formal education (-0.1496), primary occupation (-0.5783), location (-1.8759), marital status (-1.9220) and income (-1.0609) were negative. This implies that an increase in the value of any of the variables will negatively influence the estimated livelihood diversification index. The study recommended the promotion of non-farm employment as a good strategy for supplementing the income of farmers as well as sustaining equitable rural growth.*
Keywords: Livelihooddiversification, rural growth, farming households, poverty status

I. INTRODUCTION

Agriculture, the main source of livelihood in Nigeria, especially in the rural areas, is plagued with various problems such as soil infertility, infrastructural inadequacy, risk and uncertainty and seasonality among others. Thus rural households are forced to develop strategies to cope with increasing vulnerability associated with agricultural production through diversification, intensification and migrating or moving out of farming (Ellis, 2000).

Over two-thirds of the world's poorest people are located in rural areas and are engaged in subsistence agriculture (Todaro and Smith, 2009). In the developing world, the carrying capacity of the agricultural sector is declining as a result of increasing population growth with limited farm size (Sisay, 2012). The situation in Nigeria is not different especially in Benue, Cross River and Kaduna States where rural households depend on rain-fed agriculture for subsistence production. Crop production and livestock keeping are largely rural. In other words, the situation in the rural areas has negative welfare implications and predisposes the rural populace to various risks which threaten their livelihoods and their existence. As a result of this struggle to survive and in order to improve their welfare, off-farm and non-farm activities have become an important component of livelihood strategies among rural households in Nigeria. Also, the growing interest in research on rural off-farm and non-farm income in rural economies is increasingly showing that rural peoples' livelihood are derived from diverse sources and are not as overwhelmingly dependent on agriculture as previously assumed (Gordon and Craig, 2001).

Rao (2006) indicates that farming on its own is unable to offer adequate incomes for subsistence among rural households because their livelihoods are vulnerable to climatic shocks, market volatility, rising prices of

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agricultural inputs, post-harvest losses and human risks. Therefore, exploiting these off-farm opportunities could offer a pathway out of poverty for the rural poor (Barret et al., 2001). Since many rural households derive livelihoods from some form of non-farm activity, increasing the profitability and range of such activities would improve their livelihoods security and living conditions (MwabuandThorbecke, 2001; Awoyemi, 2004). But expansion of these opportunities is related to the asset status and barriers to entry resulting from inadequate or differential access to markets (Ellis, 2000). The rural economy is not based solely on agriculture but rather on a diverse array of enterprises. Much recent thinking on this subject is based on the concept of livelihood diversification as survival strategy of rural households in developing countries (Ellis, 1999). This could be owing to the fact that a diversified livelihood, which is an important feature of rural survival and closely allied to flexibility, resilience and stability is less vulnerable than an undiversified one, this is due to the likelihood of it being more sustainable over time and its ability to adapt to changing circumstances. Several studies have reported a substantial and increasing share of off-farm income in total household income (Ruben and Van den Berg, 2001; De Janvry and Sadoulet, 2001; Haggbladeet al., 2007). The reasons for this observed income diversification include declining farm incomes and the desires to insure against agricultural production and market risks (Matsumoto et al., 2006).

Nigeria, with a population of over 140 million, is Africa's most populous country and is among the continent's top four largest economies (NPC, 2006). The economy is still basically agrarian, ever since the advent of petroleum in the mid – 1970s the relative share of agriculture, livestock, forestry and fishery which was 65.6 percent in 1960/61 (with agricultural subsector accounting for 56.6 %) has declined with the agricultural sector accounting for only 32 % per annum in the 1990s. But the sector still constitutes the source of employment and livelihood for about three-quarters of the population (Oluwatayo, 2007). It is also the dominant activity in terms of linkages with the rest of the economy. The pattern of diversification and changing income levels indicates that agriculture is not a path out of poverty in many areas. Thus, the importance and impact of non-agricultural activities on the welfare of rural farm households can no longer be ignored. The rising incidence of low level of welfare of rural households in Nigeria remains unabated despite various policy reforms undertaken in the country. This requires a deeper understanding of the problem and the need to proffer solutions to the problem through approaches that place priority on the poor and ways on which rural households through diversification can maintain their livelihood.

This study therefore seeks to provide an in-depth understanding of the different activities that rural households in Nigeria engage in to generate incomes and examine how these factors affect their poverty status. It is envisaged that the results of the study will contribute in the design of antipoverty initiatives in the rural Nigeria (especially in Benue, Cross River and Kaduna States) where the majority of the population remain poor.

II. METHODOLOGY

2.1 The Study Area

This study was carried out in Nigeria. Nigeria has 36 states and the Federal Capital Territory, Abuja. The Country has 774 Local Government Areas (LGAs) with a total population of over 140 million people. The country is divided into six geopolitical zones and the zones are North-East, North-West, North-Central, South-East, South-West and South-South. The country has a total land area of about 923, 768 square kilometers. The country is one-third larger than Texas and the most populous country in Africa. It is situated on the Gulf ofGuinea in West Africa. Its neighbouring countries are Cameroon, Chad, Niger and Benin. Two Rivers, River Niger and River Benue flow through the country into the Gulf of Guinea. Swamps and mangrove forests border the Southern Coast; inland are hard wood forests and grassland. Languages spoken in Nigeria include English (official), Hausa/Fulani (Northern Nigeria), Yoruba (South-West Nigeria), Ibo (South-East Nigeria), Tiv (North-Central Nigeria) and Efik, Ijaw and Ibibio (South-South). There are more than 250 other ethnic groups in Nigeria. Thus, the diversity in languages spoken in Nigeria is a reflection of how diverse the population is in terms of culture and kind of activities they engage in.

2.2 Sampling Procedure and Data Collection

Data were collected through well structured questionnaires administered on a sample of 540 household heads in the three geo-political zones of the country using a multi-stage random sampling technique. In the first stage, one state was randomly selected from each of the three geo-political zones. The three states are Kaduna in the North-West, Benue in the North-Central and Cross River in the South-South. The second stage was the selection of two LGAs each from the states selected. A total of 6 Local Government Areas were therefore covered in the survey. The third stage involved selection of one town from each of the LGAs while the fourth stage involved a random selection of households based on probability proportional to size. Information collected includes socio-economic characteristics of respondents:-age, gender, marital status, household size, years of formal education, primary occupation, income, activities engaged in by residents of the study area, different livelihood available, social and infrastructural facilities accessible to the respondents, amount spent to access

these amenities, consumption and expenditure on food and non-food items, different indicators of poverty and general well-being etc.

Table 1: Questionnaire Administration by States and LGAs

State	LGA	Questionnaire Administered	Number Retrieved
Benue	Kwande and Gboko LGAs	200	180
Cross River	Obudu and Akpabuyo LGAs	180	162
Kaduna	Makarfi and Sanga LGA	220	198
Total		600	540

Source: Survey Data, 2015

2.3 Analytical Techniques
A number of analytical techniques were employed to analyze the data collected for the study. These include; descriptive statistics, Foster, Greer and Thorbecke (FGT) Poverty Index and the Tobit regression model.

2.3.1 Descriptive Statistics
Descriptive statistics such as mean, tables, frequency and percentage were used to analyze, summarize and describe the socio-economic characteristics of the respondents.

2.3.2 Foster, Greer and Thorbecke (FGT) Poverty Index
FGT poverty index was employed to ascertain the poverty status of the respondents and this was then used to disaggregate them into poor and non-poor categories.

Following the adoption of Foster, Greer and Thorbecke (FGT) class of poverty measures, households' total monthly expenditure was used to determine households' poverty status. The poverty line was constructed as two-thirds of the mean monthly per capita expenditure of all households. This approach has been used by several researchers and institutions (NBS, 2005) and (Oni and Yusuf, 2008) as a measure of welfare. Households were then classified into their poverty status based on the poverty line. Foster, Greer and Thorbecke (FGT) poverty index is estimated as:

$$P_\alpha = \frac{1}{N}\sum_{i=1}^{q}\left(\frac{Z_1 - Y_i}{Z_1}\right)^\alpha$$

Where;

P_α = The weighted poverty index for the ith sub-group

α = Foster –Greer –Thorbecke (FGT) index and takes on the values of 0, 1 and 2 for incidence, depth and severity of poverty measures respectively.

Z_1 = the poverty line for i^{th} sub-group

q = the number of individuals below the poverty line

N = the total number of individuals in the reference population

Y_{ij} = the per capita expenditure of household j in the sub-group i.

Z_1 - Y_{ij} = poverty gap of the ith household.

$\frac{Z_1 - Y_{ij}}{Z_1}$ = poverty gap ratio

The quantity on the bracket is the proportionate shortfall of expenditure/income below the poverty line.

$\frac{q}{n}$ = the proportion of the population that falls below the poverty line.

This is called the head count or incidence of poverty.

Ifα = o, then FGT measures the incidence of poverty

If α = 1, then FGT measures the depth of poverty

If α = 2, then FGT measures the severity of poverty

Estimation of poverty based on the FGT index was then used to disaggregate households into poor and non-poor categories.

2.3.2 Tobit Regression Model
Tobit regression model was employed to ascertain the determinants of livelihood diversification among households in the study area. The Tobit model (Greene, 2003) employed was of the form;

$Y_i^* = X_i B + \varepsilon_i$

Where ε_i is normally distributed with zero mean and constant variance.

Y_i^* is the livelihood diversification index obtained by dividing the number of livelihood sources employed by all the livelihood sources available in the study area. The value of the livelihood diversification index ranges between zero and one. The explanatory variables used in the regression analysis were measured as;

X_1 = Age (in years)

X_2 = Gender (Female = 1, Male = 0)
X_3 = Marital Status (Married = 1, Otherwise = 0)
X_4 = Household size (expressed in numbers)
X_5 = Years of formal education(in years)
X_6 = Poverty status (poor = 1, non-poor = 0)
X_7 = Income of respondents (Naira)
X_8 = Primary occupation (Farming = 1, Non-Farming = 0)
X_9 = Access to credit facility (No = 1, Yes = 0)
X_{10} = Location/Distance to Local or State Headquarters (Km)
β = Regression parameters or coefficient
ε_i = Error Term

III. RESULTS AND DISCUSSION
3.1 Socio-economic Characteristics of the respondents in the Study Area

Table 2 shows the socio-economic characteristics of respondents in the study area.

Variables	Frequency	Percentage
Age		
≤ **30**	52	9.6
31 – 40	214	39.6
41 – 50	126	23.3
51 – 60	87	16.1
61 and above	61	11.3
Gender		
Male	313	58.0
Female	227	42.0
Marital status		
Single	122	22.6
Married	315	58.3
Divorced	45	8.3
Widowed	58	10.7
Educational level		
No formal education	192	35.6
Primary education	148	27.4
Secondary education	114	21.1
Tertiary education	86	15.9
Household Size		
1 – 3	110	20.4
4 – 6	191	35.4
7 – 9	125	23.1
10 – 12	61	11.3
≥ 13	53	9.8
Primary occupation		
Farming	181	33.5
Trading	79	14.6
Civil Service	69	12.8
Private salaried jobs	63	11.7
Artisanship	148	27.4
Type of Livelihood Strategy		
Farm only	54	10.0
Non-farm only	81	15.0
Farm and non-farm	405	75.0
Total	540	100.0
Monthly Income (₦)		
≤5,000	146	27.0
5001 – 10, 000	175	32.4
10, 001 – 15, 000	86	15.9
15, 001 – 20, 000	67	12.4
20, 001 – 25, 000	40	7.4
≥25, 000	26	4.8
Total	540	100.0

Source: Field Survey (2015)

Results from Table 2 revealed that more than half (58.0 %) of the households were headed by males while more than 70 % of the respondents were young and in their economic active working age (31 – 60 years). The average age of the respondents stood at 42.5 years. While the married household heads were in the majority (58. 3%) in the study area, about 58.5 % (more than half) of the households had household sizes of between 4 – 9. This implies that household size in the study area is fairly large with an average of 6 members and this is expected to have a multiplier effect on the poverty status of the respondents. This is because large household size is usually associated with increased poverty because of reduced income per capita and a general reduction in the level of well being. With respect to the educational status of the respondents, over 60 % (more than three-fifths) of the respondents had formal education. The fact not withstanding more than one-third (35.6 %) had no formal education. This could possibly affect the poverty status of the respondents. Highlights of the primary occupation analysis of respondents revealed that about one – third (33.5 %) of those surveyed are fully engaged in agriculture. This is closely followed by those engaged as artisans (27.4 %). The distribution generally reveals the relative importance of farming as the main occupation and largest employer of labour in Nigeria. This is expected as most households in the rural areas depend mainly on agriculture as their primary source of livelihood. However, literature has shown that diverse income portfolio, creates more income and distributes more evenly. Thus it is easier to adopt the combined livelihood strategies than switching full time between either of them (Ellis, 2000).

As shown in Table 2 very few (25.0 %) of the respondents obtained income from only one source as three-quarters (75 %) of the household heads engaged in a combination of farm and non-farm activities. With respect to the monthly income distribution of the respondents, it is clear that over half (59.4 %) of those surveyed earned less than ₦10, 000 as income. Those earning between ₦ 10, 001 and ₦ 20, 000 constitute about 28.3 % while only about 12.2 % earn above ₦ 20, 000. The distribution generally indicates that the income level of respondents is very low considering the average household size of 6. Thus income per capita (a measure of the level of well-being) is also very low going by the US one dollar a day as the minimum for subsistence for households in developing countries such as Nigeria.

3.2 Reasons for Livelihood Diversification
Table 3 revealed that most of the respondents had various reasons for diversifying into other activities. Some of these reasons include limited agricultural income (44.4 %), large family size (33.3 %), availability of non-farm opportunities (10.0 %) and seasonal nature of agricultural produce (7.8 %). However, the main reasons for diversification reported in the study area were limited agricultural income and large family size.

Table 3: Reasons for Livelihood Diversification

Reasons for Diversification	Frequency	Percentage
Limited Agricultural income	240	44.4
Large family size	180	33.3
Availability of non-farm opportunities	54	10.0
Seasonal nature of agricultural produce	42	7.8
Favourable demand for goods and services	15	2.8
To live well	9	1.7
Total	**540**	**100.0**

Source: Field Survey, 2015

3.3 Poverty Status of Respondents
The distribution of respondents using the FGT poverty index (Table 4) shows that more than half (53.7 %) are poor relying on less than One ($1) US dollar a day, an indication that most of them are poor. The distribution is further alluded to by the income level of the respondents in which case about 59.4 % (Table 2) of them earn below N10, 000 per month. Respondents' poverty status by gender (Table 4) shows that there are more female-headed households (62.8%) living below the poverty line drawn for the study area than the male-headed counterpart (46.1%).

Table 4: Poverty Status Distribution of Respondents

Gender	Frequency	Poor	Percentage	Non-Poor	Percentage
Male	293	135	46.1	158	53.9
Female	247	155	62.8	92	37.2
Total	**540**	**290**		**250**	

Source: Computed from Field Survey Data (2015)
Thus female-headed households in rural Nigeria are poorer than male-headed households. This is attributable partly to their poor/lack of access and control over productive resources.

3.4 Determinants of Livelihood Diversification among Households in the Study Area

Table 5 shows the result of the Tobit model employed to examine the determinants of livelihood diversification among households in the study area. The coefficients of access to credit facility, poverty status, household size and gender are positive. This means that female-headed large –sized, poor households and those lacking access to credit facility have higher likelihood of being more diversified in their livelihood activities than male-headed, small-sized, non-poor households and those having access to credit facility. While the coefficient of gender is significant at 1 % (P<0.001), those of household size and poverty status are significant at 5 % (p<0.05). The coefficient of access to credit is not significant at all.

The coefficients of income, primary occupation, educational status, location and marital status of respondents are negative. The coefficients of educational status was negative and significant at 1 percent (p<0.001), income was significant at 5 % (P<0.05) while primary occupation and location of respondents were significant at 10 % (P<0.10) respectively. This means that household heads with formal education, married, engaged in farming as primary occupation and those living far away from headquarters of state or local governments are less diversified than those with no formal education, single, non-farming households and those living very close to the state or local government headquarters. The implication of this is that respondents with formal education are engaged in better and well-paid salaried jobs than those with no formal education hence they have lower likelihood of combining two or more jobs. Respondents with access to credit, small-sized and those living far away from the headquarters have lower likelihood of diversifying their livelihood sources. This finding is in consonance with that of Oluwatayo (2007), Mwabu (2002) and Mwabu and Thorbecke (2001) that small-sized households are less prone to poverty than large-sized households because the income per capita of the former is usually larger than that of the latter. Further, respondents living closer to the state and local government headquarters are in some instances attracted by opportunities in the towns because they are likely to be better informed.

Table 5: Tobit Regression Result of the Determinants of Livelihood Diversification

Variable	Coefficient	Standard Error	T-value
Age	0.0546	0.0404	1.351
Gender	1.0759***	0.3072	3.502
Marital Status	-1.9220	0.9043	-2.125
Household Size	0.4803***	0.1737	2.765
Years of Formal Education	-0.1496***	0.0205	-7.298
Poverty Status	2.9006**	1.0844	2.675
Income of respondents	-1.0609**	0.4136	-2.565
Primary Occupation	-0.5783	0.2944	-1.964
Access to credit facility	0.0083	0.0159	0.522
Location	-1.8759*	0.9014	-2.081
Constant	0.7658	0.4099	1.868

***, **, * Coefficient Significant at 1 %, 5 % and 10 % levels.
Prob. >Chi^2 = 0.0000932 Log Likelihood = -87.3451365
Source: Computed from survey data (2015).

IV. CONCLUSION AND RECOMMENDATIONS

This study analysed rural livelihood diversification in Nigeria. The result relied on data collected from a random sample of 540 households selected from three states (Benue, Cross River and Kaduna States) of the country. Analysis of data revealed that most of the respondents were young, married with fairly large household size. Educational analysis of respondents revealed that a sizeable proportion had no formal education with only very few educated up to tertiary level. The study has revealed that most households in rural Nigeria engage in multiple jobs (diversify) as panacea to augmenting their main income source. Again, poverty in Nigeria is high having estimated that more than half of those surveyed were poor and live on less than one dollar a day. The prominent role of agriculture has equally been stressed as the largest employer of labour in the country hence the need for more commitment on the part of government and the private sector as well as non-governmental organizations to improve on the status quo in terms of creating an enabling environment for investment. Based on the study findings, it is recommended that promoting non-farm employment may be a good strategy for supplementing the income of farmers as well as sustaining equitable rural growth. This could be achieved through training programmes directed towards training farmers in skills that can be used in non-farm jobs in their vicinity as well as improvements in infrastructure, education and financial markets. Campaign and sensitization of rural households on family planning and child spacing techniques should be made a priority so as to curtail excessive population growth.

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