ANALYSIS OF RURAL LIVELIHOOD INCOME GENERATION STRATEGIES AMONG HOUSEHOLDS IN CROSS RIVER STATE

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ABSTRACT
This study analysed the determinants of rural livelihood income generation strategies among households in Cross River state. A multi-stage randomized sampling procedure was used to collect cross sectional data in 2014. Data collected from 120 rural households were analyzed by the use of descriptive statistics and probit model. The result shows that pottery (29.55%) was the major income generating activity among the farm households while 11.36% engaged in fish smoking and carpentry. The major income generating activities for the non-farm households was hair dressing (25%), while 18.42% and 11.84% were engaged in carpentry and laundry services respectively. The results of the probit estimates of the determinants of livelihood activities showed a Chi-square value of 35.28 which was highly significant at 1% level of probability indicating goodness of fit of the probit regression line. The coefficient of road accessibility was positively signed and highly significant at 1% level of probability as well as coefficients of farm size and income which were significant at 10% level of probability each. This implies that increase in these variables will lead to increase in probability to engage in non-farm activities in the study area. The coefficient for own means of communication was negatively signed and significant at 10% level of probability which implies that the respondents tend to engage in farm activities other than non-farm activities in the study area. The results therefore call for policies aimed at promotion of agricultural and non-agricultural activities in rural areas, road construction and rehabilitation, provision of credit facilities, improved rural personnel communication system as well as making land available through implementing land reform policy.

Keywords: Rural livelihood, Income and Households

INTRODUCTION
Increase in population had led the rural household to sort for other means of living in their vicinity rather than depending on agriculture alone to sustain their families. According to Dixon, (2001) about 60 percent of 5.1 billion population of the developing regions are classed as rural; of whom around 85 percent are agricultural. As a result of this struggle to survive and in order to improve their welfare, both farm and non-farm activities have become an important component of livelihood strategies among rural households in Nigeria (Barrett, *et al*, 2001). Livelihood strategies refer to a bundle of activities that people undertake to provide for their basic need (or surpass them). It is also a process by which rural families construct a diverse portfolio of activities and social support capabilities in their struggle for survival and in order to improve their standard of living (Ellis, 1999). According to Canagarajah and Bahattaminshra, (2001) livelihood is capabilities asset (including both material and social resources) and activities required to make a living. The various ways in which individual or household, make sure that there is enough food on their table and provide the basic necessities for a good life such as clothing, housing, feeding, etc is referred as livelihood (Smith, *et al.*,2001).

Caretto, *et al.*, (2006) listed household livelihood activities as crop production, livestock production, self-employment, non-agricultural wage employment and investment in migrant's expenses. In a

typical rural setting, other sources of livelihood include fishing, fetching of firewood, hunting, trading, pottery, carpentry, shoe making, bricklaying, hair making or barbing/plaiting, vulcanizing, basketry/weaving, tailoring, driving, etc. These activities enable them to survive and also act as means of employment and sources of income generation for the households (Ellis, 2000).

This livelihood activities diversification is the norm and specialization is an exception (Barrett *et al*., 2001) especially among households. Reasons for diversification from farming to non-farm activities may ranges from desperation, opportunity, quick return and risk etc. Risk may play a role, but is not a necessary condition for individuals to choose to diversify (Haggblade, *et al.,* 2002).Diversification is widely understood as a form of self-insurance in income generation in which people exchanges some foregone expected earnings for reduced income variability achieved by selecting a portfolio of assets and activities that have low or negative correlation of incomes (Alderman and Paxson, 2000, Reardon *et al* 1998). Another reason for livelihood strategies patterns is the existence of economics scope of scale in production. Economics of scope exist when the same inputs generate greater per unit profits when spread across multiple outputs than dedicated to outputs (Barrette and Areese, 1998). The concept is thus distinct from that of economics of scale in which per unit profits are increasing as the amount of all inputs to production grows. Economics of scale tend to favour specialization

According to Babatunde and Quaim (2009) study, pattern of income generating strategies among rural households in Nigeria have fairly diversified income generations on the average. The study shows that 50% total households' income generation are from non-farm and the rest comes from farming activities. Ellis (2000) showed that household have unequal abilities to diversify their income sources and that education, asset, endowment, access to credit and good infrastructural conditions increase the levels of household diversification to non-farm activities. For instance, if one family member has a special talent for weaving basket, metal working, pottery, or some other skill-based trade, heterogeneous intra-household skill endowments would lead to rational division of labour with the skilled individual pursuing his or her trade while the other work in less uniquely skilled occupations (farming) which bring income to the household in various areas. It is therefore useful, when thinking about rural development, to think of the full range of rural income generating activities (RIGA), both agricultural and non-agricultural activities, carried out by farm households. This can allow a better understanding of the relationship between the various economic activities that take place in the rural space and their implications for economic growth and poverty reduction. This study will therefore serve as a guide to agricultural key players in poverty reduction programs and rural development in Nigeria as well as other developing countries on rural various livelihood income generation strategies among farm households. Finally, this study describes the socio economic characteristics of the farm households, different farm and non-farm livelihood activities and estimates the determinants of livelihood activities in Cross River State, Nigeria.

METHODOLO GY

The study Area

The study was carried out in Cross River State, Nigeria. Cross River State is located in the Coastal Southern part of the country with 18 Local Government Area. The state lies between latitudes 5^0 45' North of the Equator and longitudes 8 ^{0} 33 ^{1} of the Greenwich meridian (Wikipedia, 2014) and covers a total land mass of 20,156 km^2 (7,782sqmeter). It shares boundaries with Akwa Ibom state, Republic of Cameroon Atlantic ocean to the south by Abia state, Ebonyi state to the west and Benue state to the North. The state has a population of 1,471,967 males and 1,421,021 females making a total population of 2,892,988 (NPC, 2006). The mean annual temperature ranges between 30^0 to 32^0, rainfall of between 1,300mm to 3,000mm and Relative humidity of 70 to 80% through the year, except for the short period

of dry season. The climate of the state allows for favorable agrarian activities, such as palm produce, cocoa, rice, cassava, yam, plantain, maize, timber and fishing. Other economic activities practice incudes; pottery, trading, carpentry, shoe making, bricklaying, hair making or barbing/plaiting, vulcanizing, basketry/weaving, tailoring, laundry, driving tourist and area.

Sampling procedure

A multistage random sampling technique was used in selecting the respondents. In the first stage, three agricultural zones were selected. In the second stage, six (6) Local Government Areas were randomly selected from each of the three zones. In the third stage, ten (10) Villages each were selected from the Communities in the Local Government Areas. Finally twelve (12) households were randomly selected from each of the ten (10) Villages making a total sample size of one hundred and twenty (120) respondents. The cross sectional data were collected with the aid of questionnaire in 2014. The data were analyzed with the use of descriptive statistics (frequency and percentages) and probit models.

Model Specification

Probit model of determinant of livelihood income generation strategies among farm households was explicitly expressed as;

$Li = f(X_1, X_2, X_3, X_4, X_5, X_{16}, X_7, X_8, X_9, X_{10,} X_{11}) + e$

Where,

Li = livelihood activities(farming =1, non-farming =2)
X_1 = Age (years)
X_2 = Gender (dummy)
X_3 = Marital status (No)
X_4 = Household size (No)
X_5 = Education (Years)
X_6 = Accessibility to Road (No)
X_7 = Membership of cooperative org. (No)
X_8 = Farm size (ha)
X_9 = Own means of transport (dummy)
X_{10} =Own means of communication (dummy)
X_{11} =Monthly income earned (N)
ei =Error term

RESULTS AND DISCUSSION

The result in Table 1 showed the socio economic characteristic of the respondents. The results show that 35.83% of the respondents were less than 3y years old while 35.00% and 13.33% were within the age ranges of 31-40 and 41-50 years respectively. About 15.83% of the respondents were more than 50years old. This indicate that the respondents were still young, active and in their productive age. The younger the farmer is, the higher the zeal and will to diversify into more lucrative income generating activities. The age distribution of the rural household is important in two different aspects; the first is increased in productivity and the second is in the ability to diversify into different activities (Smith, 2000). The result also shows that about 50.83% of the respondents were females while 49.17% were males. This could be as a result of the type of economic activities going on in the study area. Females may be more likely to be in processing, marketing, trading, tailoring activities than their male counterparts (Babatunde and Quaim, 2009). About 46.67% of the respondents were married while

30.83%, 10.83% and 11.67% were single, divorced and widowed respectively. This result is in accordance with Gordon and Craig, (2001) who noted that rural household was dominated by married couples. The married are able to take joint decision affecting the farm and the farm households more efficiently.

Table 1: Socio Economics Characteristics of the Respondents

Variable	Frequency (120)	Percentage (100%)
Age		
<31	43	35.83
31-40	42	35.00
41-50	16	13.33
>50	19	15.83
Marital status		
Married	56	46.67
Single	37	30.83
Divorced	13	10.83
Widow	14	11.67
Educational attainment		
No formal education	18	15.00
Primary	29	24.17
Secondary	30	25.00
Tertiary	43	35.83
1ncome		
<5000	15	12.50
5001- 10000	34	28.33
10,001-15,000	27	22.50
15001-20000	38	31.67
>20,000	6	5.00
Gender		
Male	59	49.17
Female	61	50.83

Source: Field data, 2014

This also increases the ability of the households to supply the needed labour in the farm. The result shows that only 15% had no formal education while, 24.17%, 25.00% and 35.83% attained primary, secondary and tertiary education respectively. This implies that the study area was dominated by farmers who are educated. Many (31.67%) of the respondent earned between N15000 - N20000 followed by 28.33% and 22.50% who earned between N5000-10000 and N10001- 15000 respectively. This conform that most of the respondent are poor and in line with Ellis, (2000) who observed that most developing countries have high poverty level in the rural areas.

The result in Table 2 showed the frequency distribution of respondents according to the income generating activities. The result shows that pottery (29.55%) was the major income strategy among the farm households followed by fish smoking, carpentry and others (11.36% each). About 9.09% of the respondents were cobblers, laundry and palm wine tappers each. Among the least were; hair dressing (6.82%) and bricklaying (2.27%). This implied that households have unequal abilities to diversify their income sources to non-farm activities (Ellis, 2000). The results on non-farm households show that 25% of the respondents were engaged in hair dressing, followed by carpentry and laundry, 18.42% and

11.84% respectively. Others were; palm wine tapping, vulcanizing and pottery (7.89% each) and smoking of fishing (5.26%). Among the least were bricklaying (3.85%) and cobblers (2.63%).This confirmed the study of Reardon *et al*, (1992) who noted that household's capacity to cope is diversification to non-farm pattern or activities.

Table 2: Frequency Distribution of Respondents According to Their Income Generating Activities

Income Strategies	Farm		Non-farm	
	Frequency	Percentage	Frequency	Percentage
Pottery	13	29.55	6	7.89
Fish Smoking	5	11.36	4	5.26
Bricklaying	1	2.27	3	3.85
Cobbler	4	9.09	2	2.63
Hair Dressing	3	6.82	19	25.00
Carpentry	5	11.36	14	18.42
Vulcanizing	-	-	6	7.89
Laundry	4	9.09	9	11.84
Palm wine tapping	4	9.09	6	7.89
Others	5	11.36	7	9.21
Total	44	100	76	100

Source: Field data, 2014

The result in Table 3 showed the Probit regression estimates of the determinants of livelihood activities among the households in the study area. The Chi-square value of 35.28 was highly significant at 1% level of probability indicating goodness of fit of the Probit regression line. The R^2 value of 0.4235 indicates 42.35% variability in livelihood strategy explained by the independent factors in the study area. The coefficient of accessibility to road was positively signed and highly significant at 1% level of probability. This implies that increase in accessibility to the road will lead to increase in probability to engage in non-farm activities in the study area. This is against prior expectations probably because of increased access to major towns and market thereby increasing the number of non-farm activities to earn more income in the study area. This agrees with De-Janvry *et al* (2005) who noted that proximity to major towns influence participation in rural non-agricultural activities in China. Those that are closer to urban centers are less likely to participate in agricultural wage activities while those in semi-urban environments are likely to participate in non-agricultural wage employment (Winter *et al*., 2002 and Corral and Reardon, 2001)).

The coefficient for farm size was positively signed and significant at 10% level of probability. This implies that any increase in farm size will lead to increase in probability of households to engage in non-farm activities. This also is against a priori expectations probably because farming is highly laborious and not mechanized in the study area. The respondents may tend to fragment their landholdings and lease to other farmers. Access to land seems not be the determinant factor whether household remain in agriculture or shift to off-farm activities but income being generated from the activities (Adams, 2002). Although Yunze-Naude and Taylor (2001) found a positive relationship between land size and participation in agricultural activities, Winter et al (2002) contradicted the finding, that participation is a matter of choice. The coefficient for own means of communication was negatively signed and significant at 10% level of probability. This implies that with means of communication, the respondents tend to engage in farm activities than non-farm activities in the study area. The E-wallet launched by the Federal Government of Nigeria has made it easy for farmers to

access inputs such as fertilizer and planting materials at subsidized rates. The coefficient for income was positively signed and significant at 10% level of probability. This implies that increase in income will lead to increase in the probability of respondents to engage in non-farm activities in the study area. This is expected and in accordance with a prior expectation probably because, they are eager to re-invest to enable them makes quick gains. With more income they also diversify their livelihood strategies because of availability of capital. This is in accordance with Odero, (2006) that household tends to invest and reinvest their income in assets (natural, physical, human, financial and social capital) which may appreciate over time.

Table 3: Probit Estimates of the Determinants of Livelihood Strategies in Cross River State

Variable	**Coefficient**	**Std error**	t- value
Constant	-3.7438	1.4835	-2.52**
Age(X_1)	-0.0051	0.1505	-0.03
Gender(X_2)	0.0105	0.2738	0.04
Marital status(X_3)	0.0364	0.1382	0.26
Household size(X_4)	-0.0607	0.1664	-0.36
Education (X_5)	0.1662	0.1386	1.20
Accessibility to Road (X_6)	0.7211	0.221	3.25***
Membership of cooperative org. (X_7)	0.1618	0.1918	0.84
Farm size (X_8)	0.2868	0.1357	2.11*
Own means of transport (X_9)	0.2564	0.926	1.33
Own mean of Communication (X_{10})	-0.4494	0.2075	-2.17*
Income (X_{11})	0.3237	0.1485	2.18*
Chi^2		35.28***	
Pseudo R^2		0.4235	
Log likelihood		-61.2758	

Source: Results from STATA 8A *, and *** is significant at 10%, 5% and 1% level of probability.**

CONCLUSION

The study analyzed rural livelihood income generating strategies among farm households in Cross river state. The study revealed that the respondent were middle aged who are strong and agile, dominated by females who were married and educated. They engaged in both agricultural and non-agricultural activities like pottery, hair dressing, carpentry, vulcanizing among to improve their livelihood and limit pressure on the land. The study also found access to good road, own means of transportation, farm size, and income as significant determinants of rural households' livelihood activities. The result calls for policies aimed at promoting both agricultural and non-agricultural activities, access to good road and credit, improving personal means of communication as well as making land available for the rural households through land reform policies.

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