

## NON-FARM DIVERSIFICATION AMONG RURAL FARMERS IN YOLA SOUTH LOCAL GOVERNMENT AREA OF ADAMAWA STATE, NIGERIA

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### Abstract

*Diversifying livelihoods has become a common concept in development discourse across the globe in recent decades. The focus of this study was to analyse non-farm diversification in rural Yola South Local Government Area of Adamawa state, Nigeria. Specifically, the research objectives were to; describe the socio-economic characteristics of respondents, identify livelihood activities among the respondents, and also identify the determinants of diversifying into non-farm activities. Primary data were collected using questionnaire from respondents (140) drawn from the study area using multistage sampling technique. Data collected were analysed using descriptive statistics and probit regression model. Findings of the study revealed that, majority of the respondents were male (90%), 88.57% were married and 70% were educated. They are mostly farmers with average farm size of 2.47 hectares. The probit regression analysis showed that, the coefficients of age, household size, distance to market, access to credit and farm size significantly influence the decision of respondents to undertake non-farm activities in the area. The study recommended that, all development actors should ensure; improved access to credit by farmers, the provision of basic infrastructure in the area, and the empowerment of rural residents through intensified entrepreneurships and technical training.*

**Key words:** diversification, non-farm, farm households, rural, Yola-South

### INTRODUCTION

Rural areas across most developing nations are changing from being exclusively agrarian societies to those undertaking diverse economic activities in the rural non-farm sector. Although agriculture remains the main source of livelihood in such areas; but, there is growing recognition of its inability to guarantee sustainable livelihood opportunities for these rural residents [10,16]. Diversification into the non-farm sector is now a common strategy in rural areas to reduce of livelihood failure, thus, it needs more attention from policy makers [13,18,25]. [23] and [17] gave account of how the sector contributes for about 30–45 percent of rural households' income in developing nations. Diversification is seen as 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[14]. Similarly, non-farm diversification implies widening of income generating activities away from the traditional crop production and livestock rearing [5,19] . According to [14], the causes and consequences of diversification are differentiated by location, assets, income, opportunities and social relations. Considering the risk and uncertainties associated with agricultural activities, diversification contributes to better household welfare by reducing vulnerability through the generation of more financial resources [24]. Diversification in this context is as a result of a distress push. These Push factors has to do with the risk and seasonality common with farm activities; hence, rural farm households diversify their activities outside agriculture as a means of improving their livelihoods [8,15]. Agriculture has remained the main livelihood

source of majority of the residents of Adamawa state [16]. The State has a very high (2.9%) annual population growth rate [26]. This implies that, with ever increasing human population, there will be a very high demand for land. [7] and [22] outlined the effects of increased land fragmentation and rapid soil degradation to include; reduced farm yield, income and the unsustainable use of productive capacity of the land resource base. Equally, climate change has made farmers in the State vulnerable to poverty and food insecurity [2]. According to [20], 74.2% of the residents of the State are below the poverty line of \$1.25 per day and majority of them are farmers who reside in rural areas. As a consequence of these, a large percentage of rural households do diversify their livelihoods into non-farm activities to enhance their well-being [16].

Recent studies in Nigeria have shown that rural households are increasingly diversifying their income sources by combining farm and non-farm activities to sustain their livelihoods [4,5,18,19]. Yet, there is paucity of studies on the diverse non-farm activities and factors that promote such diversification by farm households in the area. In recognition of the existing gap in knowledge and practice, this research intends to provide development actors with a modest understanding of the dynamics of non-farm diversification in rural Yola South. Consequently, the study has the following research objectives:

- (i) Describe the socio-economic characteristics of the respondents;
- (ii) Identify the non-farm activities of the respondents;
- (iii) Identify the determinants of non-farm diversification in the area.

## MATERIALS AND METHODS

Yola South Local Government Area of Adamawa State, Nigeria, lies between Latitude 9° 14' North of the Equator and Longitude 12° 28' East of the Greenwich Meridian [20]. The area is located in the Northern Guinea Savannah Zone having a tropical wet and dry climate. Dry season lasts for a minimum of five months (November-

March) while the wet season spans April to October with mean annual rainfall of about 700mm [2]. The area has a land mass of 2,310.05km<sup>2</sup> and a population of 196, 197, who are mostly farmers [21]. The dominant ethnic groups in the area are Verre, Batta, Fulani, Hausa, and Laka.

In selecting respondents for the study, multi-stage sampling technique was used. Three wards (Bole/Yolde Pate, Mbamba, and Namtari) were randomly selected in the first stage.

Twelve (12) communities were randomly selected proportionate to the size of the wards in the second stage. Further, a total of 140 household heads were randomly selected from the sampled rural communities.

Descriptive statistics, such as frequency distribution, means and percentages were used to describe the socio-economic characteristics of the respondents; identify the diverse non-farm activities; and identify the constraints to taking up non-farm activities in area.

In estimating the effects of the independent variables on the probability of a farmer to participate in non-farm activities, a binary choice probit model was used.

The dependent variable (dummy) assumes the value 1 for respondents who undertake non-farm activities and 0 for otherwise. The probit model used in this study is specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U \dots \dots \dots (i)$$

Where;

Y= Non-farm Activities (Yes=1: No= 0)

$\beta_0$  = Constant

$X_1$  = Age of the household head (years)

$X_2$  = Gender of the household head (Male=1: Female=0).

$X_3$  = Household size (Number).

$X_4$  = Educational status of the respondent (Number of years).

$X_5$  = Distance to the nearest Market (Km)

$X_6$  = Membership of cooperatives (Yes=1: No= 0)

$X_7$  = Access to credit (Yes=1: No= 0)

$X_8$  = Farm size (Ha)

U= Error term

## RESULTS AND DISCUSSIONS

### Respondent's Socio-economic Characteristics

Respondents' socio-economic characteristics are presented in Table 1. Male respondents constituted the majority (90%) and mostly (88.57%) married due to tradition and social orientation. The average household size in the area was 7 which is comparable to the regional average [20]. Educationally, majority of the respondents had a minimum of primary education (70%). Majority (94%) of the respondents economically active (less than 60 years of age) and were mostly (96%) small-scale farmers cultivating 1-5 hectares of land.

Table 1. Socio-economic Characteristics of the Respondents

Variable	Frequency	Percentage
<b>Age (Years)</b>		
20 – 29	12	8.57
30 – 39	51	36.43
40 – 49	40	28.57
50 – 59	29	20.71
60 and Above	08	5.72
Mean = 41.39 Years		
<b>Sex</b>		
Male	126	90.0
Female	14	10.0
<b>Marital Status</b>		
Married	124	88.57
Widowed/Divorced	16	11.43
<b>Household size</b>		
1 – 5	59	42.14
6 – 10	65	46.43
11 and above	16	11.43
Mean = 7 People		
<b>Primary Occupation</b>		
Farming	113	80.71
Trading	09	6.43
Civil Servant	08	5.72
Artisans	10	7.14
<b>Educational Attainment</b>		
No formal Education	42	30.00
Primary School	41	29.28
Senior Secondary School	40	28.57
Tertiary	17	12.15
<b>Farm Size ( Ha)</b>		
< 1	15	10.71
1-5	120	85.71
6-10	05	3.58
<b>Total</b>	<b>140</b>	<b>100</b>

Source: Field survey, 2014

### Patterns of Non-Farm Diversification in Rural Yola South

The broad trend of non-farm activities in the area as shown on Table 2 indicates that, majority of the respondents sampled for the study undertake diverse non-farm economic activities.

Table 2. Distribution of Respondents According to their Non-farm Activities (N=140)

Activity (ies)	Frequency	Participation Rate (%)
<b>Traditional</b>		
Hunting	12	8.57
Sales of Wild fruits	04	2.86
Fishing	14	10.00
Casual Wage Labour	14	10.00
Sales of Thatch	04	2.86
Firewood gathering/sales	12	8.57
Sand Packing	05	3.57
Beer Brewing/sale	02	1.43
Barbing ( <i>wanzam</i> )	02	1.43
Butchery	05	4.76
Wood Carving	01	0.71
Oil pressing (groundnut)	02	1.43
Traditional herbal practice	03	2.14
Blacksmithing	02	1.43
Pottery	06	4.29
<b>Non-Traditional</b>		
Grinding mill operation	03	2.14
Car driving	02	1.43
Carpentry	03	2.14
Civil Service	09	6.43
Charging/Sale of Recharge cards	02	1.43
Clergy	02	1.43
Patent medicine store operation	01	0.71
Masonry/Bricklaying	03	2.14
Electrician/Mechanic	03	2.14
Motorcycle transport ( <i>Achaba</i> )	08	5.71
Photography	01	0.71
Sewing	03	2.14
Vulcanising	01	0.71
Retail shop operation ( <i>Kiosk</i> )	04	2.86

Source: Field survey, 2014

This suggests that diversifying in the non-farm sector is widespread in the study area. However, opportunities for non-farm diversification abound mostly in the traditional/informal sector of the rural economy. Traditional non-farm activities have high participating rates in the area. These activities require minimal training and start-up capital. Similarly, the intensity of performing these activities increases during the dry season when it is practically very difficult to carry out farming activities in the area. Activities that dominate this category include fishing, casual wage labour, firewood

gathering/sales, hunting and pottery among others. This may be attributed to the low level of education in the area as only about 41% of the respondents had attended secondary and tertiary institutions. Furthermore, civil servants, commercial motorcyclists (*Achaba*), and retail shop operators (*Kiosk* owners) dominate the non-traditional non-farm sector in the area. However, this category is replete with activities that are mostly semi-skilled by nature. This can be attributed to the remote nature of the area and the inadequacy of basic social amenities (roads, electricity and markets among others), hence, limiting formal non-farm opportunities in the study area.

### **Determinants of Participation in Rural Non-Farm Economic Activities**

Table 3 below provides the parameter estimates for the probit model. The marginal effects of the independent variables were estimated because of their significance in policy and decision-making. The estimated probit regression model gave the McFadden R-square of 0.600, which implies that, all the explanatory variables included in the model were able to explain about 60.0% of the variability in diversifying into the non-farm sector by the respondents. The variables found to have notable influence on undertaking diverse non-farm activities were age, household size, distance to market, access to credit and farm size.

The result showed that age has a negative and significant (5%) influence on the ability to diversify into non-farm activities. This implies that, the probability of diversifying into non-farm activities decreases with age. The likelihood of participation declines with 0.127, as the respondents get older. Most of the non-farm opportunities in the area are non-skilled activities that require physical strength, so the older people are at a disadvantage. Therefore, young people are more likely to diversify into the non-farm sector to support their livelihoods. This finding is similar to those of [1] in Ghana and [12] in Ethiopia.

The coefficient of household size was positively significant in influencing the decision to undertake non-farm activities. Specifically, the probability to undertake non-

farm activities increases with 0.247 for a member increase in household size. This is as expected, since a larger household has surplus labour and can conveniently assign workers to other activities other than farming. This finding lend credence to that of [18] in South-East Nigeria who made a similar submission. Location plays a vital role in the viability of non-farm activity. Distance to the main market centre was significant and negatively affect participation in non-activities. Conversely, farmers residing at far distant locations from market centres are less likely to participate in non-farm activities. This could be attributed to the fact that households residing in the villages distant from market centres have less access and opportunity to sell output, purchase inputs, and as well pay higher cost of transportation. This finding corroborate that of [6] in North-Central Nigeria.

Reconfirming the findings from previous studies ([18] in South-East Nigeria, [12] in Ethiopia and [9] in Ghana), the results showed that the coefficient for farm size was significant and negatively related to non-farm diversification. The implication is that a hectare increase in farm size will reduce non-farm diversification practice by 0.30. This is true as farm size increase it will in turn generate additional income all things being equal; conversely, a farming household is likely to reduce other non-farm activities [2]. This means that farmers who cultivate more land have the capacity to generate higher income, which might not motivate them to undertake diverse non-farm economic activities.

Credit access plays a key role in the decision to participate in both agricultural and non-farm activities [19]. Increase in access to credit by a given household will increase the level of non-farm diversification. The result of this study showed that, the coefficient for access to credit was significant (5%) and positively influences decisions to undertake non-farm activities. Noteworthy is that, number of years of schooling was not significant in the study area. This may be because of the lack of formal non-farm opportunities in the study area. The result coincides with the findings of [26] who opined

that, education is a key determinant of participation in remunerative non-farm activities.

Table 3. Result of Probit Regression for the Determinants of diversifying into non-farm activities

Variable	Coefficient	Std. Error	Z-Statistic
Age(X <sub>1</sub> )	-0.127427	0.020551	-6.200445 *
Gender(X <sub>2</sub> )	0.560304	0.664330	0.843412
Household size (X <sub>3</sub> )	0.247464	0.079792	3.101352 *
Education level (X <sub>4</sub> )	-0.012532	0.029499	-0.424813
Distance to market (X <sub>5</sub> )	-0.091218	0.030564	-2.984466 *
Coop. membership (X <sub>6</sub> )	-0.092782	0.363432	-0.255295
Access to credit (X <sub>7</sub> )	1.181196	0.519420	2.274068 **
Farm size (X <sub>8</sub> )	-0.303915	0.133303	-2.279873 **
C	6.778168	1.368042	4.954650
R <sup>2</sup>	0.600		

Source: Field survey, 2014

## CONCLUSIONS

Generally, farmers in the study area have highly diversified livelihoods, given that a majority of the households were found to derive their income from a combination of farm and non-farm activities. Hence, the need to create an enabling environment that will promote remunerative non-farm activities, which will in turn better the lives of rural households in the area. In the light of the findings from the study, it is recommended that:

- (i)The government at every tier should strengthen initiatives that seek to increase access to credit for rural farm households. This will enhance the establishment of non-farm businesses and promote agricultural development simultaneously.
- (ii)Provision/ improvement of critical economic infrastructure such as roads, electricity, markets and communication facilities will encourage non-farm diversification.
- (iii)The government and other stakeholders responsible for the development of rural area in the state should provide entrepreneurships and technical training to rural residents. This can help to improve farmers' capacity to undertake more profitable non-farm economic activities.

## REFERENCES

- [1]Abdulai, A., Delgado, C. L., 1999, Determinants of nonfarm earnings of farm-based husbands and wives in northern Ghana, *Am. J. Agric. Econ.*, 81(1): 117–130.
- [2]Adebayo, A. A., Onu, J. I., Adebayo, E. F., Anyanwu, S. O., 2012, Farmers' awareness, vulnerability and adaptation to climate change in Adamawa State, Nigeria, *Br. J. arts Soc. Sci.*, 9(2): Retrieved June 14, 2014 from: <http://www.bjournal.co.uk/BJASS.asp>.
- [3]Adebayo, A. A., 1999, Climate, sunshine, temperature, evaporation and relative humidity, in Adamawa State in Maps, A. L. Adebayo, A. A. and Tukur, Ed. Yola, Nigeria: Paraclette, pp. 20–22.
- [4]Adepoju, A. O., Adejere, A. K., 2013, Food insecurity status of rural households during the post-planting season in Nigeria, *J. Agric. Sustain.*, 4(1): 16–35.
- [5]Ahmed, F. F., 2012, Income diversification determinants among farming households in Konduga, Borno State, Nigeria., *Acad. Res. Int.*, 2(2): 112–118.
- [6]Babatunde, R. O., Qaim, M., 2009, Impact of off-farm income on food security and nutrition in Nigeria Impact of off-farm income on food security and nutrition in Nigeria.
- [7]Bamire, A. S., 2010., Effect of tenure and land use factors on food security among rural households in the dry savannas of Nigeria., *African Journal of Food, Agriculture, Nutrition and Development*, 10(1): 1982-2000.
- [8]Barret, C. B., Reardon, T., Webb, P., 2001, Non-agricultural income diversification and household livelihood strategies in rural Africa: Concepts, dynamics and policy implications, *Food Policy*, 26(4): 315–331.
- [9]Dary, S. K., Kuunibe, N., 2012, Participation in rural non-farm economic activities in Ghana, *Am. Int. J. Contemp. Res.*, 2(8): 21–28.
- [10]Davis, J. R., Bezemer, D., 2004, The Development of the Rural Non-Farm Economy in Developing Countries and Transition Economies: Key Emerging and Conceptual Issues, Chatham, UK.
- [11]De Janvry, A., Sadoulet, E., 2001, Income strategies among rural households in Mexico: the role of off-farm income, *World Dev.*, 29(3): 467–480
- [12]Demissie, A., Legesse, B., 2013, Determinants of income diversification among rural households: The case of smallholder farmers in Fedis district, Eastern hararghe zone, Ethiopia, *J. Dev. Agric. Econ.*, 5(3): 120–128.
- [13]Ellis, F., 2000, Rural livelihoods and diversity in developing countries. Oxford: Oxford University Press.
- [14]Ellis, F., 1998., Household strategies and rural livelihood diversification., *J. Dev. Stud.*, 35(3): 481–496.
- [15]Ellis, F., 2005, Small farms, livelihood diversification, and rural-urban transitions: Strategic issues in Sub-Saharan Africa. The future of small farms, Kent, UK.

[16]Fiona, N.-Z., Samuels, M., Gavrilovic, C., Miguel, H., 2011., Food, finance and fuel: the impacts of the triple F crisis in Nigeria, with a particular focus on women and children: Adamawa State Focus, London, UK.

[17]Haggblade, S. Hazell, P., Reardon, T., 2007., Transforming the rural non-farm economy. Baltimore: John Hopkins University Press..

[18]Ibekwe, O. C., Eze, U.C., Ohajianya, C.C., Orebiyi, D.O., Onyemauwa, J.S., Korie, C.S., 2010, Determinants of nonfarm income among farm households in South East Nigeria, Academia Arena, 2(8): 29–33.

[19]Ibrahim, H. and Onuk, G. E., 2009, Analysis of rural non-farm diversification among farming households in Doma Area of Nasarawa State, Nigeria., Pat.Nsuk J., 5(1): 49–54.

[20]National Bureau of Statistics, 2013, National living standard survey, Abuja, Nigeria.

[21]National Population Commission, 2006, Human population figures of 2006 census in Nigeria, Lagos, Nigeria.

[22]Okezie, C. A., Ahuchuogu, C. U., Jamalludin, F., 2012, Exploring the link between land fragmentation and agricultural productivity, Int. J. Agric. For., 2(1): 30–34.

[23]Reardon, T., Delgado, C., Matlon, P., 1992, Determinants and effects of income diversification amongst farm households in Burkina Faso, J. Dev. Stud., 28: 264–296.

[24]Sharma, R., 2010., Rural Development and Livelihood Diversification: An Empirical Investigation of the conditions in Jammu and Kashmir, 439.

[25]Shehua, A., Sidique, S. F., 2013., A propensity score matching analysis of the impact of participation in non-farm enterprise activities on household wellbeing in rural Nigeria, International Agribusiness Marketing Conference, pp. 26–32.

[26]United Nations Population Fund, 2014, Population Growth. [Online]. Available: [nigeria.unfpa.org/Nigeria.html](http://nigeria.unfpa.org/Nigeria.html). [Accessed: 25-Apr-2014].