

## Analysis of Factors Influencing Labour Supplied to Non-Farm Sub-Sector by Households in Mubi North Local Government Area of Adamawa State, Nigeria

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**ABSTRACT:** The study was carried out on the socio-economic factors influencing labour supplied to the non-farm sub-sector by households in Mubi North Local Government Area of Adamawa State, Nigeria. Data were obtained using structured questionnaire. Multi-stage sampling technique was used to select the respondents. A total of 100 households were randomly and proportionately selected from the wards for the analysis. Descriptive statistics and regression model were used as analytical tools. The results indicate that about 38% of the farming household members were between the age group of 36-45 years, majority (72%) were male while, 28% were female. Most 52% had less than 20 years experience in farming. The findings also reveal that most 54% of the farming household members attended tertiary education. Majority (60%) cultivated less than 1 hectare of land. The results of the regression analysis reveal that educational level had negative coefficient, while occupation had positive coefficient and are all significant at 1% level respectively. Also farming experience and gender have positive coefficients, while marital status had negative coefficient and are all significant at 5% level respectively. It was recommended that government should come up with a law to guide, protect and manage the non-farm sub-sector to ensure sustainable source of income to farming households, agricultural extension agents should educate farmers on the role of the non-farm sub-sector as a means of rising financial capital and employment; and policy makers should design policies and programmes that will address issues on non-farm activities as a means of creating favourable conditions to reduce poverty among farming households.

**Keywords:** Factors, Labour, Non-farm Sub-sector, Households, Adamawa State, Nigeria.

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### INTRODUCTION

Rural development policies often neglect the role of rural non-farm activities and their link with agriculture. This might be because the role of the rural non-farm sector which is the least understood component of the rural economy, its role in the broader development process is not well known (Lanjouw and Shariff, 2002). Traditionally, rural households in developing countries have been viewed as though they were exclusively engaged in agriculture (Lanjouw and Shariff, 2002). There is mounting evidence, however, that rural households can have highly varied (and often multiple) sources of incomes. Furthermore, rural households can and do participate in a wide range of non-agricultural activities such as wage employment and self-employment in commerce, manufacturing and services,

along-side the traditional rural activities of farming and agricultural labour. Such non-farm incomes can contribute significantly to total incomes of farming households in developing countries (Lanjouw and Shariff, 2002). Where agriculture was unable to provide wide spread employment, the non-farm sector played an important role in picking up part of the slack (Hazell and Haggblade, 1990). Furthermore, the average daily wage roles in non-agricultural sector for instance, in India are found to be highest in States with high agricultural daily wages. A study on the non-farm sector concludes that between 18-25 percent of rural employment occurred in the non-farm sector in the beginning of the 1990s (Fisher *et. al.*, 1997). Similarly, in a study in India in North Arcot district, in Tamil Nadu, a 1 percent increase in agricultural output was

associated with a 0.9 percent growth in non-farm employment (IFPRI, 1985). Furthermore, a non-farm activity is a means of creating favourable conditions to reduce poverty in the rural areas (FAO, 1998; Matshe and Young, 2004). Growth in the rural non-farm activities may also be used to stem the rapid rural-urban migration and the attendant urban poverty in most developing countries (Goldsmith *et al.*, 2004). Besides, the opportunity for income diversification and reduction of income variability/risks that off-farm labour offers (Schultz, 1990; Abdullahi and CroleRes, 2001). The predominantly peasant farmers in Africa especially in Nigeria, off-farm labour supply is also important means of raising financial capital among farming families (Offert, 1995). It also represents an alternative form of employment and source of income, most especially to the rural land.

There is a fear in many parts of the world that rapid growth in agriculture during the next few decades may remain elusive, and the with absence of other sources rural growth will be difficult to maintain, much less raise rural per capita living standards (Shittu *et al.*, 2006). The result could be raising rural poverty and an acceleration of migration to urban areas. The significance of non-farm labour activities supply in raising household income therefore, call for a sustained research work on all aspects of non-farm labour supply activities of the rural area.

The study therefore, determine the socio-economic factors influencing labour supplied to the non-farm sub-sector by household members in Mubi North Local Government Area of Adamawa State, Nigeria. The specific objectives were to:

- i. examine the socio-economic characteristics of the farming households; and
- ii. determine the socio-economic factors influencing the number of work days supplied to the non-farm sub-sector by the household members in the study area.

The following hypotheses were postulated for testing:

Ho: There is no significant relationship between the socio-economic characteristics of the household members and the number of workdays supplied to the non-farm sub-sector;

Ha: There is significant relationship between the socio-economic characteristics of the household members and the number of workdays supplied to the non-farm sub-sector.

## METHODOLOGY

Mubi North Local Government Area is one of the 21 Local Government Areas of Adamawa State, Nigeria. It occupies a total land area of about 6,424 square kilometers (ASADP, 1997) and about 200 kilometers away from Yola, the state capital. Mubi North shares common borders with Mubi South, Hong and Maiha Local Government Areas to the west, south and north respectively. The population of the area is 216,854 people with estimated annual growth rate of 2.8% (NPC, 2006).

The communities in Mubi North are Fulani, Gude, Margi and Fali. It has minimum and maximum rainfalls ranging from 900mm to 1050mm, while the maximum and minimum temperatures are 28.9 and 21.9<sup>0</sup>C respectively (NMA, 2008). The area is a very fertile land for the cultivation of crops and rearing of livestock. This has made agricultural production activities a profitable venture. Crops grown in the area include cassava, cowpea, groundnut, maize, etc. Multi-stage sampling technique was used to randomly select three (3) districts out of the existing six (6) districts in the area in the first stage. These are Bahuli, Vimtim and Lokuwa. In the second stage, six (6) wards were purposively selected from the three (3) districts to reflect areas where the farming and non-farm labour activities were mainly practiced. These are Polere, Sabon Layi, Yelwa, Digil and Mudala. In each of the five (5) wards, 16 households were randomly selected. While 20 households were randomly selected in Digil because, not all the wards have equal number of households in the area. A total of 100

farming households were randomly and proportionately selected from the wards for the analysis.

The data for this study were obtained from both primary and secondary information sources. The primary data were collected on socio-economic variables such as age, gender, educational qualification and marital status. Also, data was obtained on the number of workdays devoted to the non-farm sub-sector by the farming household members in the study area. The secondary sources of information include Textbooks, Government publications, Thesis, Journals and Internet.

The analytical tools for this study included descriptive statistics and regression model. Descriptive statistics employed for this study include frequency and percentage. These techniques were used for analysis of the socio-economic characteristics of the households.

Tobit regression model was used to analyze the socio-economic factors influencing the number of workdays supplied to the non-farm sub-sector by the farming households. The Tobit model was chosen for this analysis because it can measure the probability of number of workdays supplied to non-farm sub-sector (McDonald and Moffi, 1980; Jack and John, 1997). Similarly, it is a censored regression model which disallows the prediction of the negative workdays of the household members (Shittu *et. al.*, 2006). In addition, Tobit regression model is a good model that can be used to identify the determinants of number of workdays allocated to the non-farm sub-sector, since it can measure the parameters of the conditional probability of number of workdays supplied to the non-farm sub-sector and the explanatory variables on Hence,

$$Y_i = \beta X_i + \mu \quad \dots\dots\dots \text{equation 1}$$

$$Y_i = \beta_0 + \beta_1 X_1 + \dots\dots \beta_n X_n \quad \dots\dots \text{equation 2}$$

$i = 1$

Following the above equation the functional form for the *i*th household

number of workdays supplied as well as the effect of the marginal changes in the explanatory variable on number of workdays supplied to the non-farm sub-sector.

More so, coefficients from Tobit regression can be easily interpreted. Coefficients of Tobit model do not correspond directly with the expected changes in the explanatory variables; rather, it estimate a vector of normalized coefficients which can be transformed into vector of the first derivative.

Furthermore, Tobit model is more advantageous over the dichotomous choice models such as Probits model (Finney, 1971) and the logit model (Aldrich and Nelson, 1984), that it permits determining the determinants of the number of workdays supplied to the non-farm sub-sector. It also uses the observed values of the dependent variable. The model assumes that the number of workdays supplied to the non-farm sub-sector by household members is a function of a vector of explanatory variables,  $x_i$  and unknown parameter vector  $e$ .

For the purpose of this study, the number of workdays supplied to the non-farm sub-sector was measured by the average number of workdays devoted by each working member to off-farm activities. In this case, the dependent variable was the average number of workdays devoted by each working member to non-farm activities. The model specification can be seen below, the probability that  $Y$  equals number of workdays supplied to the non-farm sub-sector (average number of workdays devoted to non-farm activities) is a function of independent variable:

member specified with a Tobit model can be expressed as:

$$Y_i = \beta x_i, \text{ If } i^* = X_i \beta + \mu_i > T \quad \dots\dots \text{equation 3}$$

$$Y_i = 0, \text{ If } i^* = X_i \beta + \mu \leq T \quad \dots\dots \text{equation 4}$$

Where:

$Y_i$  = Probability that household member will supply number of workdays to the non-farm sub-sector (average number of workdays devoted to the non-farm activities).

$i$  = Non-observable latent variable representing the negative workdays of the household member.

$T$  = Non-observable threshold level (cut off) or critical value which translate into  $i^* > T$  as a household member supply number of workdays to the non-farm sub-sector.

$x$  = Vector of socio-economic factors.

$\beta$  = Vector of parameters estimated.

$\mu$  = Stochastic error term.

The model for the Tobit regression is implicitly expressed as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, u).$$

Where:

$Y$  = Number of working days to be supplied to the non-farm sub-sector (measured by average number of workdays devoted by each working member to non-farm activities).

$X_1$  = Age of working member (years)

$X_2$  = Farm size (hectares)

$X_3$  = Level of education (No. of years spent in formal education)

$X_4$  = Farming experience (years)

$X_5$  = Gender dummy (1 male, 0 female)

$X_6$  = Marital status dummy (1 married, 0 otherwise)

$X_7$  = Major occupation dummy (1 for traders, artisans, civil servants, private sector employees, other labour income sources and 0 if farming only).

$u$  = Error terms.

It was expected *a priori* that the coefficients of age ( $X_1$ ), farm size ( $X_2$ ), Farming experience ( $X_4$ ), and occupation ( $X_7$ ) would be positive while those of level of education ( $X_3$ ), gender ( $X_5$ ) and marital status ( $X_6$ ) would be negative.

## RESULTS AND DISCUSSION

**Socio-economic Characteristics of the Farming Households:** The socio-economic characteristics variables examined include gender, marital status, age, farming experience, farm size, household-size, educational level, occupation, household labour sources, category of work, number of days devoted to the non-farm sub-sector and the number of household members working in the non-farm sub-sector per month. The findings are presented in Table 1.

The result shows that 72% of the farming household members were male while, 28% were female. This indicates that majority of the household members engaged in non-farm labour supply in the study area were male. The reason might be because, male have a significant role to play in the family as household heads in providing the households basic needs such as food. Thus, engage in non-farm labour supply activities to attract extra income apart from farming.

The result also reveals that 60% of the farming household members were married. About 08% were single, 12% were widowers, 15% were widows while, 5% were divorced. These indicate that majority of the farming household members were married. This suggests that married household members have many mouths to feed, therefore, engage more in non-farm activities that would attract extra income to supplement their household income than singled and divorced household members.

**Table 1: Socio-economic Characteristics of the Farming Households**

<b>Socio-economic Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Gender:</b>		
Male	72	72
Female	28	28
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Marital Status:</b>		
Married	60	60
Single	08	08
Widower	12	12
Widow	15	15
Divorced	05	05
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Age (Years):</b>		
Less than 35	16	16
36 – 45	38	38
46 – 55	22	22
55 and above	24	24
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Educational Level:</b>		
No Formal Education	16	16
Primary	08	08
Secondary	22	22
Tertiary	54	54
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Farming Experience:</b>		
Less than 20	52	52
21 – 30	27	27
31 – 40	11	11
41 and above	10	10
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Farm Size:</b>		
Less than 1	60	60
2 – 3	29	29
4 and above	11	11
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Household Size:</b>		
Less than 10	38	38
11 – 20	46	46
21 and above	16	16
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Major Occupation:</b>		
Trader	2	2
Farming	46	46
Civil Servant	42	42
Artisan	4	4
Craftsman	6	6
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Household Labour Source:</b>		
Family	14	14
Hired	9	9
Communal	5	5
Family/Hired	72	72
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Work Categories:</b>		
Work solely on farm	42	42
Work solely on non-farm	22	22
Farm and non-farm	36	36
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Number of days devoted to non-farm sector per month:</b>		
Less than 5	82	82
5 and above	18	18
<b>Total</b>	<b>100</b>	<b>100</b>

Source: Field Survey, 2008.

The findings indicate that 52% of the farming household members have less than 20 years of experience in farming, 27% have between 21 – 30 years, while 21% of them have 21 years and above experience in farming. The result show that majority of the farming household members have reasonable farming experience in the study area. This agrees with the findings of Tijani (2007) who indicated that majority of farmers in North-eastern states such as Borno State, Nigeria have reasonable farming experience during the 2006/2007 cropping season. The farming experience of farmers to a large extent affects their managerial know-how and decision-making. Besides, it influences the farmers understanding of climatic and weather conditions as well as socio-economic policies and factors affecting farming (Iheanacho, 2000).

The result shows that majority 60% of the farming household members cultivates less than 1 hectare of land, 29% cultivates between 2 – 3 hectares while, 11% cultivates 4 hectares and above in the study area. From the findings, majority of the farmers in the study area can be categorized as small-scale farmers. This conformed with the findings of Tijani (2007) that majority of the farmers in the north-eastern States such as Borno State, Nigeria, are small-scale farmers who cultivate less than 4 hectares of land.

The result reveals that 38% of the farming household members have less than 10 persons in their households. About 46% have between 11–20 persons, 16% have 21 persons and above in their households in the study area. This indicates that most of the respondents have larger household size which enables them to receive various forms of assistance from both their wives and children on the farm.

Analysis of the findings also indicate that 54% of the farming household members attended tertiary institutions, 22% and 16% attended secondary and primary education respectively, while only 8% did not attend any form of formal education. This indicates that most of the farming household members attended various forms of education in the study area. This might have probably helped them to be employed in the non-farm sub-sector to supplement their household income.

The result also shows that 72% of farming household members depend on both family and hired labour, 14% depend on family labour, 9% and 5% of them depended on both hired and communal labour sources respectively. The implication here is that majority of the farming household members

obtain their labour from both family and hired labour sources for their various agricultural activities, which might probably be due to scarcity and high cost of labour in the study area.

The finding reveals that 42% of the farming household members work solely on the farm, 36% work on both farm and non-farm sub-sectors, while 22% work solely on non-farm sub-sector. This indicates that farming household members work solely on their farms which might probably be because farming is their major occupation in the study area.

The result shows that majority 82% of the farming household members devoted less than 5 days per month to the non-farm sub-sector, while 18% devoted 6 days and above to the non-farm sub-sector per month in the study area. This implies that majority of the farming household members devoted few days to the non-farm sub-sector per month. This means most of them spent larger proportion of their workdays on farming, which consumes more time than the non-farm sub-sector. This is evident from the findings (Table 1) most of the farming household members indicated farming as their major occupation.

The result of the analysis shows that 46% of the farming household members indicated farming as their major occupation, 42% were civil servants, 6% were craftsmen, 4% were artisans, while only 2% were traders. The result indicates that most of the respondents are engaged more in farming than other occupation in the study area.

#### **Analysis of Factors Influencing Household Labour Supplied to the Non-farm Activities**

In order to determine the factors influencing household labour supplied to the non-farm activities, average number of workdays supplied to non-farm sub-sector by household members was regressed against socio-economic variables such as age, farm size, education, farming experience, gender, marital status and occupation. The findings are presented in Table 2.

The results indicate that educational level and marital status were negative and significant at 1% and 10% levels, respectively. This conforms with the *a priori* expectation that household members number of workdays supplied to the non-farm activities negatively influence their educational level and marital status respectively.

The negative coefficient of the educational level suggests that the number of workdays supplied to the non-farm activities by household members was lower among literate than illiterate household members. Literate household members with higher qualification tend to attach great importance in search of lucrative white-collar job than unskilled non-farm sub-sector. It should

however, be noted that one major role of educational qualification is its being a prerequisite for appointment and placement of individuals on salary scales in paid employment in the government or private sectors. The educational level therefore, has negative relationship with the number of workdays supplied to the non-farm labour activities by a household member.

**Table 2: Tobit Regression Estimate of Factors Influencing Household Labour Supplied to the Non-farm Activities**

Socio-economic Variables	Coefficients	Standard error	T-value
Age (X <sub>1</sub> )	-0.0233661	0.0243344	-0.96
Farm size (X <sub>2</sub> )	0.0897557	0.1674202	0.54
Education (X <sub>3</sub> )	-0.0985122	0.0269083	-3.66*
Farming experience (X <sub>4</sub> )	0.0447189	0.0255472	1.75**
Gender (X <sub>5</sub> )	0.08454037	0.4540403	1.86**
Marital status (X <sub>6</sub> )	-0.7501705	0.4293656	-1.75**
Occupation (X <sub>7</sub> )	0.5070332	0.0725695	6.99*
Constant	2.70212	0.6791133	3.98*
Log likelihood	-159.7985		
Predicted probability of y > limit	0.4927		

Source: Computed from Field Survey Data, 2008.

\* = significant at 1%; \*\* = significant at 10%.

Also marital status has a negative coefficient which suggests that married household members supply less number of workdays to the non-farm labour activities than household members that are not married. The reason is that married household member's supply larger portion of their workdays to the farm activities to provide household food needs.

There is also a positive relationship between farming experience, gender and occupation with the number of workdays supplied to the non-farm labour activities by a household member. The coefficients are significant at 10% and 1% levels respectively. This conformed to the *a priori* expectations for farming experience and occupation, but contrary to that of gender.

The positive coefficient of farming experience implies that farmers with more years of farming experience tend to be efficient in using improved technology that can consume less time (workdays) and few labour hands in their agricultural productions. Thereby allocating larger proportion of their workdays to the non-farm sub-sector that would generate extra and sustainable income. There is also a positive relationship between the gender of household members and the number of workdays supplied to non-farm labour activities. The positive coefficient of the

gender variable implies that male household members supply more number of workdays to the non-farm labour activities than the female household members. The reason is that the males have a significant role to play in the family as household heads. Thus, provide the household food and other basic needs. For this reason, therefore, the larger proportion of the workdays that will be supplied by the male household members to non-farm activities is directed to farming that will supply food.

The positive coefficient of occupation suggests that the number of workdays supplied to non-farm activities by household members decrease with increase in number of occupations engaged by household members. This is also plausible because, household members that are involved in multiple occupations supply more workdays to non-farm activities than those that have farming as a major occupation. This agrees with the finding of Shittu *et. al.*, (2006) that individuals that were trained for non-farm activities, that is traders, civil servants, private sector employees and artisans (tailors, hairdressers, etc) were revealed to be more likely to work non-farm and tend to supply more workdays to non-farm

activities than an average individuals that have taken farming as their main occupation.

### **Conclusion and Recommendations:**

Based on the findings, it can be concluded that majority of the farming household members were married and attended tertiary education in the study area. The findings also re-affirmed the claim that educational level, marital status, farming experience, gender and occupation were the factors influencing household members' number of workdays supplied to the non-farm labour activities in the study area. Based on the finding the following recommendations are made:

- i) The government should come up with a law to guide, protect and manage non-farm sub-sector to ensure sustainable source of income to farming household.
- ii) Non-farm sub-sector should be incorporated into the poverty alleviation programme of the government, as this would help to boost farmers' income outside farming and ensure national food security.
- iii) Agricultural extension agents should educate farmers on the role of the non-farm sub-sector as means of raising financial capital among farming families and as alternative form of employment and source of income.
- iv) Agricultural extension agents should advise farmers on the non-farm labour supply as opportunity for income diversification and reduction of income variability/risks.
- v) Policy makers should design policies and programmes that will address issues on non-farm activities as a means of creating favourable conditions to reduce poverty among farming households.

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