

## Analysis of Off-Farm Work among Farming Households in Oyo State

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**Abstract:** The study analysed off-farm work among households in Oyo state. Multistage sampling was used for the study. Data were collected through interview schedule carried out with two hundred and fifty respondents in twenty five villages in Ogbomosho and Oyo/Iseyin Agricultural Zones of the state. The data were analysed using descriptive statistics and Logit model. The study identified the determinants of farming households' decision to engage in off-farm work. The analysis showed that, five (5) out of the variables considered proved to have significant impacts on the farming households decision to work off-farm. Four of these, educational level of farmers, wife's educational level, hired labour and distance to the farm were positively significant. Wife's age was negatively significant at 5% level. The study also identified the probability of participation in off-farm work. The analysis showed that only wife's age proved to have significant influence on the probability of participation in off-farm activities.

**Keywords:** Off-farm income, farming household, Oyo state

### INTRODUCTION

Nigeria is considered as one of the leading countries in Africa and a country endowed with oil wealth and potential wealth in gas reserves. It has a population of about 140 million people which is more than 15% of Africa's total population (Okunmadewa, 1997). Agricultural production in Nigeria is poor and below expectation. It has been the main occupation of the majority of the people living in the rural area where most of them engaged in the production of food to feed the country population either directly or indirectly (Akindeyin, 2003).

Agricultural system in Nigeria is a low external input agriculture (LEIA) in which the rate of technology adoption (chemical, biological and mechanical technologies) is low and the rate

of use is equally low (Uwatt, 1998). Rural areas in Nigeria are plagued with poverty more in terms of incidence, depth and severity (World Bank, 1996). Agricultural production in Nigeria still relies heavily on the rural farmers who constituted about 90% of food producers for the nation (Rahji, 2000). World Bank (1996) described them as small scale operators, tenants or landless, characterized by low income and nutritional deficiencies, limited assets, large family size, high dependency ratio.

The above might have arisen because majority of Nigeria farmers live in rural areas with the practices being so primitive, subsistent and counter productive that the nation has been found wanting in her effort toward making great supports in sufficient food production in quantity and quality for her fast growing population (Ekong, 2003). As a result of this problem of poor performance, many

have put the blame solely on an average Nigerian farmer who is characterized as an irrational, conservative, ignorant and superstitious resource allocator (Olayide, 1993).

Some scholars (Aromolaran, 2002; Godwin, 1997) yet attributed the poor performance of those farmers to the following factors;

- (a) Non availability of credit facilities to permit the farmers to make the change over from low productivity usually self sufficient farming to more productive cash crops.
- (b) Low level of formal education also affect to a large extent the managerial ability of the farmers, hence it may reduce their tendency for diversification to get higher income especially off-seasons.
- (c) More farmers cultivate crops only and they practice rain-fed agriculture and are therefore subjected to risk of crop failure. They depend mainly on good weather condition.
- (d) Poor extension services and contact with farmers.
- (e) Non-availability of inputs like fertiliser, chemicals and tractorization for farmer's use.
- (f) The low hectareage cultivated by most of the farmers hinders hectareage/output expansion with its stagnating effect on income.

In trying to reduce the effect of some of the problems above, some farmers combine one or more occupation with farming hence the genesis of off-farm activities. It follows that additional income must be earned in off-farm work, for most Nigeria farmers, farming is a seasonal occupation except in areas where some form of

irrigation are practiced, farmers therefore endeavour to supplement their income with petty jobs outside farming (Ekong, 2003; Lee, 1996).

Early in the 20th century, farming household did little off-farm work because the costs of such participation were prohibitive. Farm households relied on farming as their primary and usually sole source of income (Brewster, 1979). Hence, some farmers may want to abandon farming or seek off – farm work to cushion their productivity and over all welfare (El-Osta, 1996). The income generated by off–farm work may be used to pay the debt of the farmers and to feed their family during scarcity of farm produces i.e. off–season. However, how the farmers pursue this goal will depend on his education and wealth among others (Bessant, 2002).

Some widely known off–farm occupations include the following; saw milling, pottery, weaving, carving, leather works, carpentry, bicycle – repairing, black smiting, knitting and dressmaking, dyeing, retailed trading, barbing and hair dressing, entertainment, drinking parlour operation, teaching, bricklaying and house construction, midwifery native doctoring, preaching, transport operation etc. (Ekong, 2002). Although there are numerous non farming occupation in the Nigerian rural areas, it is observed that the level and intensity of these occupations are usually such that they are over – shadowed by agricultural activities when these are compared with those of the urban area (Ekong 2003).

Studies have shown that farm households engaged in many work as well as farming (Blekesaune *et al*, 1998). The typical farm household is thus faced with the problem of inherent trade – off between or among its many activities and objectives. The growing uncertainties of farming together with increased opportunities for off–farm work have led to

a new arrangement of combining off-farm work with farming (Godwin and Marlowe, 1990).

Since increased agricultural output is the key to future development and prosperity of the developing world at large; it follows that traditional farming systems are the basis of agricultural production among farmers. The fact that rural farmers are plagued by poverty has been one of the most important factors retarding agricultural development in the country (Rahji, 1999). This now makes the farm household members to increase their participation in off-farm work at the expense of farming when the marginal returns to the former become larger than the marginal returns to the latter (USDA, 2001).

The problem therefore centres on understanding the farm households' behaviour or reaction and on identifying the determinants of off-farm activities participation by farming households in Ogbomoso Zone of Oyo state. This study covers only Ogbomoso Agricultural zone of Oyo state Agricultural Development Programme, whereas Rahji (1999)'s work covers the whole state. The specific objectives of the study are to:

- i. identify the type of off-farm work in which farming households are engaged with in the study area,
- ii. analyse the determinants of participation in off-farm work by households in the study area, and
- iii. estimate the probability of participation in off-farm work by households in the study area.

## LITERATURE REVIEW

In many rural areas, agriculture alone cannot provide sufficient livelihood opportunities. Rural off-farm employment can play a potentially significant role in reducing rural poverty. Off-farm income provides the cash that enables a farm household to purchase food during a drought or after a harvest shortfall. It is also a source of farm household savings used for food purchase in difficult times (Barrett and Reardon, 2001). Growth in the rural off-farm sector may reduce income inequality if income from such activities disproportionately favour the poor, off-farm income can compensate for inadequate farm incomes of the poorest.

Most evidence shows that non-farm activities in African is fairly evenly divided across commerce, manufacturing and service linked directly or indirectly to local agriculture or small towns and is largely informal rather than formal (Reardon, 1997). Household earn much more from non-farm activity than from wage labour but non-farm wage labour is more important than self employment in the non farm sector (Reardon, 1997).

Livelihood diversification is often characterized as being driven by two processes; distress – push where the poor are driven to seek non farm employment for want of adequate on farm opportunities and demand – pull where rural people are able to respond to new opportunities. In the former situation, large numbers may be drawn into poorly remunerated with low entry barrier activities while the latter are more likely to open a route to improved livelihood. Lanjouw and Feder (2000) pointed out that; “such employment may nevertheless be very important from a welfare perspective for the following reasons; off-farm employment income may serve to reduce aggregate inequality where there exist

seasonal or longer term unemployment in agriculture, household may benefit even from low non-farm earning and for certain sub groups of the population that are unable to participate in the agricultural labour market, non-farm incomes offer some means to economic security.”

Ekong (2003) emphasised that off-farm occupation in rural areas in Nigeria share certain characteristics which go to explain their inferior status. These implies that they; generally entail low capital investment and often do not use complex machine, usually entail low levels of division of labour, are usually regarded as part time occupations or other job besides farming, involve minimum or no retraining of workers for better productivity. In most cases other workers apart from the owner of the business serve as an apprentice and usually paid wages. The owner is usually the proprietor/manager thereby making them very private enterprises; his level of education may be so low that the level of his business management, skill and knowledge of market information are all low.

## METHODOLOGY

Oyo State is divided into four agricultural zones; these are the Ibadan/Ibarapa, Oyo/Iseyin, Saki and Ogbomoso Zones. Two zones were randomly chosen for the study. They are Ogbomoso and Oyo/Iseyin Agricultural zones. Agriculture is the major occupation in these areas with household constituting the majority of the farm labours.

Ogbomoso Zone of Oyo State is located at approximately latitude  $8^{\circ}10'N$  and longitude  $3^{\circ}29'E$  (Ogbomoso town planning Authority, 1998) while Oyo/Iseyin is on latitude  $4^{\circ}2'N$  and

$6^{\circ}5'E$  (Oyo town planning Authority, 1998). The vegetation of the area is generally regarded as derived savannah for Ogbomoso zone and rain forest for Oyo/Iseyin, the mean monthly temperature is around  $28^{\circ}C$  with very little variation in March. The rainy season usually starts in March and last till November, June and July are usually wet months for both zones. The estimated population figure was 208,045 with 99,405 males and 108,640 females for Ogbomoso zone and 240,426 with 106,530 males and 133,896 females for Oyo/Iseyin (National Bureau of Statistics, 2006). The major crops grown include food crops such as maize, cassava, yam, vegetable, beans and tree crops like mango, cashew and orange.

Both primary and secondary data were used for the research work. The primary data was a cross sectional data obtained using structured questionnaire while secondary data was collected by reviewing relevant and past literature. The questions were prepared in English language but were translated into Yoruba during its administration to non-educated farmers.

Multistage random sampling technique was employed for the study. Ogbomoso and Oyo/Iseyin zones comprise of five (5) local government areas each. Three local government areas and two local government areas were selected randomly from Ogbomoso and Oyo/Iseyin zones respectively. From each local government area five (5) villages, were chosen randomly. In each village a sample of 10 farmers were drawn randomly. A total of two hundred and Fifty (250) farmers were interviewed. Descriptive statistics and logit analysis were used for data analysis. The descriptive analysis involved the use of frequency counts and percentages

The logit model postulates that the probability ( $P_i$ ) that an individual (i) participates in

off – farm work is a function of an index,  $Z_i$ .  $Z_i$  is also the inverse of the standard logistic cumulative function of  $P_i$  i.e.

$$P_i (Y = 1) = F (Z_i)$$

$$Z_i = F^{-1} (P_i) \dots\dots\dots (1)$$

This index in addition to this summarises a set of the participants attributes (Xs). It is known to be a linear function of the attributes.

$$\text{So, } b_1 X_1 + b_2 X_2 + \dots\dots\dots Z_i = b_0 + b_1 X_1 + b_2 X_2 + \dots\dots\dots b_n X_n$$

The probability of participation is given by

$$P_i (Y_i = 1) = \frac{1}{1 + e^{-z_i}} \dots\dots\dots (2)$$

The probability of non participation is given by

$$Q_i (Y = 0) = 1 - P_i (Y = 1)$$

But

$$1 - P_i (Y = 1) = \frac{1}{1 + e^{z_i}}$$

$$e^{z_i} = \frac{pi(yi = 1)}{1 - pi(yi = 1)} \dots\dots\dots (3)$$

The right hand side of the equation (3) is the ratio of the probability of participation to the probability of non participation.

The Dependent Variable ( $Y_i$ ) is a dummy. It takes the value of 1 if the individual participates in off – farm work and 0 if otherwise. Because the dependent variable is binary, the ordinary least square (OLS) technique is inappropriate to estimate the model. The Cumulative Distribution function (CDE) is used to estimate such regression. The logistic function is chosen in this case. The probability of

participation ( $P_i$ ) by the individual is calculated from  $\bar{Z}_i$  values.

The probability of participation for the model is estimated from the average value of  $\bar{z}_i$  as

$$\bar{Z}_i = b_0 + b_1 \bar{X}_1 + b_2 \bar{X}_2 + \dots\dots\dots + b_n \bar{X}_n$$

The value is then converted into a probability value using the probability table. It was hypothesized that the probability of participation depends on the individual’s age ( $X_1$ ), age of the wife ( $X_2$ ), years of formal education of farmer ( $X_3$ ), years of formal education of wife ( $X_4$ ), farming experience of farmer ( $X_5$ ), family labour ( $X_8$ ), farm size ( $X_9$ ), hired labour ( $X_{10}$ ) and distance to farm ( $X_{11}$ ). The selection of these variables is guided by previous studies as well as economic theory.

## RESULTS AND DISCUSSION

### Farming Household by Off-Farm Income

Table 1 showed that 29.2% of the respondents earned off-farm income between N5000-N50000 from their off farm work. It also shows that 24.0% earned between N50,001–N100,000, 11.2% earned between N100,001 and N150,000, 12% earned between N150,001 and N200,000, 7.0% earned between N200,001 and N250,000, 10.4% earned between N250,001 and N300,000 and 9.3% earned >N300,000 in the year estimated. Based on this findings one may conveniently say that majority of the respondents had less or equal to N100,000 as their annual off-farm income. This means that the respondents have additional income to the family thereby not depending entirely on the farm’s income; hence farmers with off farm work have enough money which may translate to better life for them.

Table 1: Distribution of Farming Household by Off-Farm Income.

Off farm income (N)	Frequency	Percentage
≤ 50,000	73	29.2
50,001 – 100,000	60	24.0
100,001 – 150,000	28	11.2
150,001 – 200,000	30	12.0
200,001 – 250,000	19	7.60
250,001 – 300,000	26	10.4
> 300,000	14	5.6
Total	250	100.0
Mean = 139,765		

Sources: Field survey, 2007

### Farming households by off farm works.

Table 2 revealed that 22.8% of the respondents were engaged in trading as their off farm work, 9.60% engaged in bricklaying, 9.2% in security work, 9.2% were found doing tailoring, 10.0% engaged in carpentry work, 10.4% in driving, 4.8% were engaged as clerks while 24.0% of the respondents engaged in other activities which were not listed. Respondents

Table 3: Regression results

Variables	Units	Coefficient	Standard Error	t-value
Constant (k)		-.3972169840	.89644369	-.443
Farmers age (X1)	yrs	.3979407037E-03	.22041976E-01	.018
Wife age (X2)	yrs	-.1072847049E-02	.63047313E-03	-1.702*
Farmers Education (X3)	yrs	.54918290	.32022327	1.715*
Wife education (X4)	yrs	.7237249994	.40583918	1.734*
Farming Experience (X5)	yrs	.1658519032E-01	.27759137E-01	.597
Farm Income (X6)	N	.2099843528E-05	.14619467E-05	1.436
Household Net worth(X7)	N	-.1462810496E-05	.11421652E-05	-1.281
Family labour (X8)	manday	.1830000101E-01	.22403291E-01	.817
Farm size (X9)	(Ha)	.1201693515E-02	.41078858E-01	.029
Hired labour (X10)	manday	2.28231326709	.98673293	2.313**
Distance to farm (X11)	Km	.25952163	.13644677	1.902*

Source: Field survey 2007.

Pearson  $\chi^2 = 9.31$

Likelihood ratio = 9.31

N = 250

DF = 11

\*\*Significant at 5%, t=0.05

\* Significant at 10%, t=0.10

engaged in these different activities to supplement farm work.

Table 2 Distribution of farming households by off farm work

Off – farm work	Frequency	Percentage
Bricklayer	24	9.6
Security Work	23	9.2
Trading	57	22.8
Tailoring	23	9.2
Carpentry	25	10.0
Driving	26	10.4
Clerical work	12	4.8
Others	60	24.0
Total	250	100.0

Source: Field survey, 2007.

### Analysis of regression results

Table 3 represented the results of the logit regression model. The Pearson chi-square ( $\chi^2$ ) was used to test for the goodness of fit. The calculated  $\chi^2$  which was the same thing as the likelihood ratio was 9.31 for the farmers.

The result of the analysis indicated that farm income (X<sub>6</sub>), family labour (X<sub>8</sub>), farmer's age (X<sub>1</sub>), farming experience (X<sub>5</sub>), and farm size (X<sub>9</sub>) had positive but insignificant influence on

farmer's off-farm work participation which implies that the more these variables increase, the more the participation in off-farm work. This contradicted the

findings of Rahji (1999), which shows that the above variables negatively significant in his study in 1999.

Years of formal education of farmer ( $X_3$ ), wife education ( $X_4$ ), hired labour ( $X_{10}$ ), and distance to farm ( $X_{11}$ ), had positively significant influence on farmers off – farm work which revealed that the higher the educational level of the farmer, wife education, hired labour and distance to farm, the more the participation in off-farm work. This also contradicted the findings of Rahji (1999) in which those variables were negatively significant in his study in 1999. The household net worth ( $X_7$ ) was negative and not statistically significant i.e. the lower the net worth the more the participation in off-farm work. The wife's age ( $X_2$ ) had negatively significant influence on farmers' off-farm work which implies that the higher the wife's age the lower the participation in off-farm work. This conforms to the findings of Rahji (1999) as he found out that household size and wife's age also had negatively significant relationship with off-farm work in 1999.

It should be noted that a positive sign of a parameter indicated that higher value of the variable tend to increase the likelihood of participation in off-farm employment. Similarly a negative sign of a coefficient implies that

higher value of the variable would decrease the probability of engaging in off-farm work.

Overall, five of the variables in the model showed a significant influence on the off-farm behaviour of the farming households.

#### **Probability of participation**

The result of the analysis indicated that farmer's age ( $X_1$ ), years of formal education of the farmer ( $X_3$ ), years of formal education of wife ( $X_6$ ), family labour ( $X_8$ ), farm size ( $X_9$ ) hired labour ( $X_{10}$ ) had a positive but insignificant influence on the farmer's probability of participation in off farm work which implies that the more the variables the lower the probability of participation in off – farm work. Wife's age ( $X_2$ ) had a negative but significant influence on the probability of participation of farmer in off-farm work. Household net worth ( $X_7$ ) and distance to farm ( $X_{11}$ ) were negative and not statistically significant in the probability of participation of the farming households in off-farm work. This implies that the lower the household net worth and distance to the farm the more the probability of participation in off – farm work; this contradicted the findings of Rahji (1999) in which household net worth and distance to the farm were positive and statistically significant in his study in 1999.

Table 4 Estimated probability of participation

Variables	Units	Coefficient	Standard Error	t-values
Constant (k)		-.9609820671E-01	.21737989	-.442
Farmer's age (X1)	yrs	.9627329532E-04	.53326017E-02	.018
Wife's age (X2)	yrs	-.2595525410E-03	.15223715E-03	-1.705**
Farmer's education (X3)	yrs	.9695433686E-03	.14784074E-02	.588
Wife education (X4)	yrs	.1302661017E-03	.15156658E-03	.859
Farming experience (X5)	yrs	.4012434292E-02	.67154242E-02	.597
Farm income(X6)	N	.5080125109E-06	.35290356E-06	1.440
Household net worth(X7)	N	-.3538959080E-06	.27647729E-06	-1.280
Family labour (X8)	Manday	.4427296291E-02	.54180597E-02	.817
Farm size (X9)	Ha	.2907242048E-03	.99381946E-02	.029
Hired labour (X10)	Manday	4094581230E-03	.11753165E-02	.348
Distance to farm (X11)	Km	-.6074818576E-02	.96337398E-02	-.631

Source: Data analysis, 2007

\*\* Significant at 5%, t0.05

## CONCLUSION AND RECOMMENDATION

The study focused on the analysis of off-farm activities among farming households in Oyo State. Primary data were collected with the aids of questionnaire administered to one hundred and fifty respondents.

The study summarises that the respondents had additional income to the family thereby being independent of the farmer's income hence farmers with off-farm work have enough money to purchase fertiliser with pesticide which enhance productivity which translated to better life for them.

It should be noted that a positive sign of a parameter indicated that higher value of the variable tend to increase the likelihood of participation in off – farm employment. Similarly a negative sign of a coefficient implies that higher value of the variable would decrease the probability of engaging in off – farm work. Overall, five of the variables in the model (years of formal education of farmer, wife education, hired labour, distance to farm and wife's age showed a significant influence on the off-farm behaviour of the farming households. Only the wife's age (X<sub>2</sub>) had a negative but significant

influence on the probability of participation of farmer in off-farm work.

Based on the findings of the study, the following recommendations were suggested;

- (1) There should be an awareness campaign for off-farm work, rural dwellers to supplement their income from their farm work. This will go a long way in boosting their income for the family.
- (2) Making more land available to the farmers for agricultural production purposes. The more land they have the more labour that will be required. These can only come from the allocation to off – farm work. Farm expansion must be backed with an operational tenure system, Land Use Act and land development agency. In other words, an effective and redistribution policy is called for, these policy options are deemed necessary and sufficient to push agriculture forward and for the country to attain its agricultural development objectives.
- (3) Government should provide assistance to the rural farmers by way of providing loans monitoring groups and generally programmes that can generate funds.

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