



## **ANALYSIS OF ON-FARM AND NON-FARM INCOME GENERATING ACTIVITIES OF RURAL FARMERS IN NSUKKA AGRICULTURAL ZONE, ENUGU STATE, NIGERIA**

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### **Abstract**

The study analyzed the on-farm and non-farm income generating activities of rural farmers in Nsukka Agricultural Zone, Enugu State, Nigeria. A multi-staged sampling procedure was used in selecting 120 farmers that participated in the study and structured questionnaire was used to elicit information from them. Both descriptive and inferential statistics were used in analyzing the data. Major results showed that majority (92.5%) of the respondents engaged in food crop while 23.3% were involved in collection of forest products for on-farm activities. About 60% of the farmers are into trading while 20% are into mining under non-farm activities. Animal husbandry gave the highest annual mean income (N569, 039) from on-farm activity while the least annual mean income (N78, 964) was from sale of forestry products. For non-farm activities, the highest annual mean income of N482, 659 was from transportation while the least annual income (N119, 318) came from mining. The hypothesis result showed that there is a significant difference between annual mean income from non-farm and on-farm activities of respondents. It concluded that income from farm sources are not sufficient to cater for the needs of farmers. Therefore, government should assist rural farmers to access credit without collateral for increased production.

**Keywords:** Income, on-farm activities, non-farm activities, rural farmers

### **Introduction**

Rural people have always engaged in on-farm and non-farm activities. Most rural households in Nigeria, are involved in agricultural activities as their main source of

livelihood, however, they also engage in other non-farm income generating activities to augment the main source of income. Diversification activities make greater contribution to generate cash incomes for poorer households and it is a key strategy by which people try to make ends meet and improve their well-being. Agricultural production has enhanced economic growth, reduced poverty, food security and creation of employment. However, most households go into the non-farm sector due to unexpected crop failure from crop disease, variability in the soil quality, unpredictable rainfall and other related weather events (Adepoju and Obayelu, 2013, Mejid, 2014, Nashid and Tanjila, 2015).

A non-farm activity refers to an economic activity other than the production of primary agricultural commodities, livestock and forestry, fishing and hunting (LIFCHASA, 2012) while on-farm activities include all those agricultural or farm activities which generate income to rural farmers such as crop production, animal husbandry, fishing, cash crop, plantation, forestry etc.

Non-farm activities thus include mostly agro-processing, shop-keeping, peddling, petty trading, medium and large scale trading, manual labour-based activities such as mining, manufacturing, construction, commerce, financial and personal services, self-employed subsistence-oriented cottage industries, wage employment in rural business activities, transport operation and construction labour, etc. Physical and human capital intensive activities include commercial type rural industries, including food processing, trading, basket weaving, shoe making, carpentry, transportation, etc. (Meluduet *al.*, 1999; Lanjouw, 2001).

Furthermore, Ovwigho (2014), opined that non-farm activities are supplementary or complimentary activities that farmers engage in, either off-season or on-season to support themselves such as in casual labor, transportation business, traditional dancing, wine taping, petty trading etc. The non-farm income is the sum of rural non-farm income and wage earning in agriculture. Non-farming income generating activities to larger extent cushion the effect of seasonality of primary agricultural production and create a continuous stream of income to cater for exigencies of life. Similarly, non-farm activities have been gaining prominence in the comparison to its influence on rural household income to farm activities since interest in boosting agriculture in Nigeria and establishing channels that can help rural farmers to sell off their farm produce declined (Lanjouw and sheriff, 2002).

However, Nashid and Tanjila (2015) agreed that multiple factors can cause households to diversify assets, incomes and activities though, non-farm activities can as well be an

important stimulant for the economic growth of rural areas. They provide option for rural households in adverse situations such as reduction of cultivable lands, conflict or communal crisis, sub-division of land holding, high or frequent increase on farm land rent and population pressure as well as insufficient capital to invest on farm.

In Enugu state, agriculture plays a pivotal role towards economic growth and majority of the rural poor in Nsukka zone of Enugu State depend on agriculture as their source of livelihood, however, with the present hard economic situation and poverty in the land, rural households are diversifying their sources of income as coping strategy to cushion the effect of the present hard economic conditions. Hence, majority of the farmers are very much engaged non-farm activities to increase their household income.

Therefore it is necessary to carry out this study to assist policy makers formulate policies that are research-based and farmer-oriented in order to raise the income of rural households from non-farm activities that will complement farm income to enhance the living standard of rural households in Nsukka agricultural Zone of Enugu State, Nigeria.

Thus, the specific objectives of the study are to: (i) describe the socio-economic characteristics of respondents, (ii) ascertain the various on-farm income generating activities the respondents engage in (iii) ascertain the various non-farm income generating activities, (iv) determine the income derived from on-farm activities and; (v) determine the income derived from non-farm activities by respondents in the study area,

### **Methodology**

The study was conducted in Nsukka Agricultural Zone Enugu State, Nigeria. Nsukka agricultural zone is one of the three agricultural zones in Enugu state, Nigeria. It is made up of six local government areas (LGAs) namely: Nsukka, Igbo-Eze North, Igbo-Eze South, Isi-Uzo, Udenu and Uzo-Uwani Local Government Areas. Enugu State is one of the states in Southeastern Nigeria, created in 1991 from part of old Anambra State. Enugu is located at 6°30'N 7°30'E of the Equator and the Greenwich Meridian, 6.500°N 7.500°E.

Multi-stage random sampling technique was adopted for the selection of respondents for this study. Three out of six LGAs were randomly selected for the study. They included Nsukka, Isi-Uzo and Uzo-Uwani LGAs.

Also two communities were randomly selected from each of the three LGAs. They included Nsukka and Eha-Alumona for Nsukka LGA, Eha-Amufu and Umuro for Isi-Uzo, Nkpologu and Adani for Uzo-Uwani LGA. Furthermore, through random sampling, 20

farmers were selected from each community for the study based on their involvement in both on-farm and non-farm activities to give a total of 120 respondents.

Both descriptive and inferential statistics were used to analyze data. Specifically, all the objectives were realized using descriptive statistics such as frequency counts and percentages, standard deviation and means, while inferential statistics such as z-test was used to test the hypothesis.

To test the hypothesis which states that there is no significant difference between income from non-farm activities and income from on-farm activities of farmers in Nsukka zone of Enugu, Z-test was used. The model is stated thus:

$$Z = \frac{\bar{x}_1 + \bar{x}_2}{\sqrt{\frac{(Var_1)}{N_1} + \frac{(var_2)}{N_2}}}$$

Z = Z statistic

$\bar{x}_1$  = Sample mean for non-farm income activities

$\bar{x}_2$  = Sample mean for non-farm income activities

Var<sub>1</sub> = Sample variance for on farm income activities

Var<sub>2</sub> = Sample variance for non-farm income activities

N<sub>1</sub> = Sample Size for on farm income

N<sub>2</sub> = Sample size for non-farm income

## **Results and Discussion**

### ***Socio-economic characteristics of respondents***

The result shows that over fifty percent (53.5%) of the respondents were males while less than fifty percent (46.7%) were females. Oladejiet *al* (2005), observed that it is generally believed that males are often more energetic and could readily be available for energy demanding jobs which are usually associated with farming. The mean age of the farmers was 42 years, implying that the farmers were in their active age group, where their energies could be harnessed and utilized for productive ventures especially in on-farm and non-farm activities. Age has been described as an important factor that influences the probability of adoption of new technologies (Akudaguet. *al.*, 2012). Average farming experience was 19 years. Farming experience is expected to influence involvement in on-farm and non-farm sources of income because it is expected that the farmers must have gather experience from involvement in various on-farm and non-farm activities which will help them in decision

making. According to Nsikanet *al.* (2014), experienced farmers are expected to have learnt through several years of trials and errors.

Also, the results show that majority of the farmers (86.70%) had small farm sizes less than 2.0 hectares. Small farm size may affect the size of food production which in turn affect the amount of on-farm income of the farmers. Chikezieet. *al.* (2012) opined that the farm size cultivated is a function of population pressure, family size and financial background of the farmers.

Furthermore, the results reveal that 71.7% of the respondents had no access to credit while 28.3% had access to credit. Access to credit can increase farmers' liquidity which may encourage them to invest in more rewarding on-farm and non-farm activities. Also, accessibility of farmers to credit facilities may increase their access to agricultural inputs which may increase food production thereby increasing their income from agricultural activities.

**Table 1: Distribution of Respondents Based on socio-economic characteristics**

| <b>Variables</b>                  | <b>Frequency</b> | <b>Percentage (%)</b> | <b>Mean</b> |
|-----------------------------------|------------------|-----------------------|-------------|
| <b>Sex</b>                        |                  |                       |             |
| Female                            | 56               | 46.7                  |             |
| Male                              | 64               | 53.3                  |             |
| <b>Age (Years)</b>                |                  |                       |             |
| less than 21                      | 9                | 7.5                   |             |
| 21-30                             | 28               | 23.3                  |             |
| 31-40                             | 58               | 48.3                  | 42 years    |
| 41-50                             | 13               | 10.8                  |             |
| greater than 50                   | 12               | 10.0                  |             |
| <b>Farming experience (Years)</b> |                  |                       |             |
| 1-10                              | 25               | 20.8                  |             |
| 11-20                             | 17               | 14.2                  |             |
| 21-30                             | 19               | 15.8                  | 19.40       |
| greater than 30                   | 59               | 49.2                  |             |
| <b>Farmland Size (hectares)</b>   |                  |                       |             |
| less than 0.5                     | 29               | 24.2                  |             |
| 0.51-1.0                          | 42               | 35.0                  |             |
| 1.1-1.5                           | 19               | 15.8                  |             |
| 1.51-2.0                          | 14               | 11.7                  |             |
| greater than 2                    | 16               | 13.3                  |             |
| <b>Access to Credit</b>           |                  |                       |             |
| Yes                               | 34               | 28.3                  |             |
| No                                | 86               | 71.7                  |             |

Source: Field survey data, 2019

**Various on-farm income generating activities of farmers**

From the analysis in Table 2, 92.5 % of the rural households are engaged in food crop production, 64.2%% practice livestock production, 43.3% are involved in fishery, 40.0 % are involved in cash crop production, 30.0% are involved in plantation agriculture while 23.3% are involved in collection of forest products, From the analysis, it was observed that food crop production and animal husbandry are the major on-farm agricultural activities undertaken in the study area by farmers. Odoh (2015) noted that the reduction in food crop production is prevalent form of on-farm agricultural production. He further noted that the availability of lands in rural areas, low financial input, and the frequent rainfalls especially in the rainy season are some of the factors that influence crop production and that make many farmers in rural areas to take up food crop production as an enterprise.

The findings of this study regarding the involvement of the a greater percentage of farmers in animal husbandry is in tandem with that of Igwe (2013) and Odoh (2015) noted that small ruminants, fishery and poultry production constitute the major livestock produced by rural farmers in South Eastern Nigeria and this was also the case in Nsukka Agricultural Zone. Livestock activities provide alternative source of income (savings) as well as protection against income from crop failure. This corroborates the finding of Ogbanjo (2015) that about 45% of rural households in Ebonyi State kept livestock. According to him, these livestock which were kept for traditional and customary reasons also serve as a form of savings and contingency funds particularly due to the non-existence of formal Credit Institutions in the rural areas.

**Table 2: On-farm Income Generating Activities Undertaken by Rural Farmers in the Study Area**

| Categories of Activities | Frequency | Percentage | Ranking         |
|--------------------------|-----------|------------|-----------------|
| Food crop                | 111       | 92.5       | 1 <sup>ST</sup> |
| Animal Husbandry         | 77        | 64.2       | 2 <sup>nd</sup> |
| Fishing                  | 52        | 43.3       | 3 <sup>rd</sup> |
| Cash crop                | 48        | 40.0       | 4 <sup>th</sup> |
| Plantation               | 36        | 30.0       | 5 <sup>th</sup> |
| Forestry                 | 28        | 23.3       | 6 <sup>th</sup> |

**\*\* Multiple responses recorded**

**Source: Field survey data, 2019**

***Non-farm income generating activities of farmers***

Table 3 shows the various non-farm activities undertaken by rural farmers in Nsukka Agricultural zone. From the analysis the majority of the farmers (60.05%) were into trading. During the survey and consequent interview with the farmers, it was observed that the forms of trading undertaken by the farmers include sale of shoes, fairly used clothes, drinks/water, and snacks etc, about 55% engaged in business activities. It was observed that the business activities undertaken by the farmers include land agent business, barbing, hair dressing etc.

The result further reveals that 39.2%, 38.3%, 20% and 26.7% engaged in construction (furniture construction, house construction, welding etc), transportation(example taxis, motorcycle and tri-cycle business), mining and restaurant/hotel business respectively.

The vast proportion of farmers that diversified into non-farm activities can be ascribed to the limited land mass in South East Zone of Nigeria with the population competing for the little available arable land. Furthermore, Obinna and Onu (2017) opined that the meager income derived from farm enterprises compels households in rural African societies to engage in non-farm activities to supplement income, in order to lessen risk inherent in income from agricultural activities. They went ahead to explain that in places with limited land, the non-farm activities serve as vital economic option for the poor rural households. Mezid (2014) stated that on-farm activities contributes more to household income.

**Table 3: Non-farm Activities Undertaken by Rural Farmers in the study area**

| <b>*Categories of Activities</b> | <b>Frequency</b> | <b>Percentage</b> | <b>Ranking</b>  |
|----------------------------------|------------------|-------------------|-----------------|
| Trading                          | 73               | 60.0              | 1 <sup>ST</sup> |
| Business services                | 66               | 55.0              | 2 <sup>nd</sup> |
| Construction                     | 47               | 39.2              | 3 <sup>rd</sup> |
| Transportation                   | 46               | 38.3              | 4 <sup>th</sup> |
| Restaurants and hotels           | 32               | 26.7              | 5 <sup>th</sup> |
| Mining                           | 24               | 20.0              | 6 <sup>th</sup> |

**\*\* Multiple responses recorded**

**Source: Field survey data, 2019**

***Annual mean income from on-farm activities to rural farmers' income***

Results in Table 4 revealed the contribution of on-farm activities to households' income in Nsukka Agricultural zone. Animal Husbandry contributed the highest mean income

(₦569,039) annually to rural farmers in the study area. The annual mean income from cash crop is ₦223,000. The annual mean Income from plantation agriculture, fishing, food crop and forestry were ₦184,125, ₦124,538, ₦116,495 and ₦78,964 respectively per year.

The highest annual mean income from animal husbandry can be attributed to the high profitability of animal husbandry enterprise especially poultry products like poultry meat, poultry egg, goat meat etc. The high demand coupled with the willingness of consumers to pay even at higher prices makes the income from animal husbandry greater than that of others. Furthermore, the proximity of the study area to University of Nigeria Nsukka coupled with the high meat demand from the schools could have been responsible for the highest annual mean income from animal husbandry.

However, Income from forestry ranked lowest. The possible reason is because frequent deforestation in the study area has reduced the types and quantity of monetary forest products which makes the income accruable from forest resources to dwindle.

**Table 4. Distribution of Respondents based on their annual mean income from On-Farm Activities to their Income**

| Activities        | Mean Income/year(?) | Ranking         |
|-------------------|---------------------|-----------------|
| Animal husbandry  | 569,039             | 1 <sup>ST</sup> |
| Cash crop         | 223,000             | 2 <sup>nd</sup> |
| Plantation        | 184,125             | 3 <sup>rd</sup> |
| Fishing           | 124,538             | 4 <sup>th</sup> |
| Food crop         | 116,495             | 5 <sup>th</sup> |
| Forestry products | 78,964              | 6 <sup>th</sup> |

**\*\* Multiple responses recorded**

**Source: Field survey data, 2019**

***Income from non-farm activities to rural farmer***

Table 5 revealed the contribution of non-farm activities to households' income annually. The study showed that transportation contributed the highest (₦482,659) mean income annually to rural farmers in the study area. This is not surprising because Nsukka Agricultural Zone plays host to the University of Nigeria Nsukka and the high influx of students, visitors and even researchers into the area made transportation a viable option in the study area. Findings during the survey showed that the income from transportations



from the use of motorcycles, tricycles and vehicles to transport good and services within and outside Nsukkashowed that majority of them get into transportation when there is no much work to be done in the farm.

The income as a result of restaurant was ₦358,666. This implies that Restaurant is also another form of non-farm activity that gives greater income to farmers is restaurant. Survey findings showed that the restaurants operated by the rural farmers include small scale road side restaurants that sell varieties of food or that specialize on a particular food to medium scale restaurants in a shop that specializes on assorted foods and drinks. These farmers that combine farming with restaurant business generally had a large household size that made up the bulk of labour for the farm and restaurant business. The income from business services, construction, trading and mining were ₦234,469, ₦208,468, ₦178,000 and ₦1193, 182 respectively.

**Table 5. Distribution of Respondents based on the Income from Non-Farm Activities**

| <b>Activities</b> | <b>Mean Income/year ( ? )</b> | <b>Ranking</b>  |
|-------------------|-------------------------------|-----------------|
| Transportation    | 482,659                       | 1 <sup>ST</sup> |
| Restaurant        | 358,666                       | 2 <sup>nd</sup> |
| Business services | 234,469                       | 3 <sup>rd</sup> |
| Construction      | 208,468                       | 4 <sup>th</sup> |
| Trading           | 178,000                       | 5 <sup>th</sup> |
| Mining            | 119,318                       | 6 <sup>th</sup> |

**\*\* Multiple responses recorded**

**Source: Field survey data, 2019**

***Difference between annual income from farm and non-farm activities***

Results in Table 6 shows the Z-Test analysis between mean annual income from farm and non-farm activities. The mean annual income from non-farm is N 683,583.33 while that from on-farm activities is N 637,408.33. Since the Z-calculated is higher than the Z-tabulated, the result indicates that there is a significant difference between non-farm and on-farm income. This implies that farmers in Nsukka agricultural zone undertake non-farm income activities to augment the financial gap not filled by farming activities. This is similar to the findings of Odohet *al* (2019) who noted that income from farm ventures alone is inadequate as such the households have to resort to non-farm activities as a way of augmenting whatever income gotten from farm.

This result in Table 6 indicated that, the amount accrued to households to augment their income from on-farm activities (crop and livestock) is less in comparison to non-farm activities. This significant proportion of contribution to households' income cushions a lot of effects and over dependence on income from on-farm activities. And this agrees with the finding of Tijjaniet al. (2009) that most of the farming households participating in off-farm activities earned their average annual household income from non-farm activities. Odohet al (2019) reported that the income from farm ventures in south east were lower than that from non-farm ventures.

**Table 6: Z-Test Analysis on the Difference between income from non-farm activities and income from on-farm activities of farmers in Nsukka Agricultural Zone in Enugu, Nigeria**

| Variables       | N   | Mean       | Standard deviation | Df  | Z   | z-tab |
|-----------------|-----|------------|--------------------|-----|-----|-------|
| Non-Farm income | 120 | 683,583.33 | 706,753.883        | 238 | 578 | 1.96  |
| On-farm income  | 120 | 637,408.33 | 515,405.127        |     |     |       |

### **Conclusion and Recommendations**

The diversification of farmers' income to more non-farm or farm economic activity is indication that income from farm ventures or from a single farm venture alone is inadequate as such the households have to resort to non-farm activities or undertaking multiple farm activities

From the study, it can be concluded that income from on-farm and non-farm activities are significantly difference and the income from farm sources are not sufficient to carter for the needs of the farmers.

Therefore, the study recommended that non-governmental organizations and other donor agencies in collaboration with the Government can link the rural farmers to access credit through reduced interest rates and possibly a waiver of collateral requirement to enable them increase production and invest more into non-farm activities for increased income

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