Analysis of contributions of non-farm livelihood activities to overall household income of rural farming households in Oyo State, Nigeria

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Abstract
This paper examined the contributions of non-farm livelihood activities to overall household income of rural farming households in Oyo State. In this study, a multi-stage sampling procedure was used to select 170 respondents from whom data on personal characteristics, access to credit, types of farm and non-farm activities engaged in, and income made from the activities, were collected using a well-structured interview schedule. The data were analysed using descriptive statistics such as frequency counts, percentage and mean as well as Herfindahl diversity index. The findings showed that higher proportion (65.3%) of the respondents were male while 78.2% married, 64.2% had household size of 5 persons and above and 75.3% had one form of education or another. High proportion (42.4%) had between 11 and 20 years of farming experience, 52.9% had farm size of more than 3 hectares and 60.6% had no access to credit facility. More than half (52.4%) of the rural farming household were engaged in non-farm activities. Government work, trading and private business among others, were the common non-farm activities among the respondents. The contribution of non-farm income to household income was 21.52% only. The results unveiled a Herfindahl diversity index of 0.4161 which shows a 41.61% level of diversification, for all households. The study therefore concludes that the contributions of non-farm livelihood activities to overall household income of rural farming household were low. It therefore becomes imperative for the respondents to scale up their non-farm activities in order to increase their household income.
Keywords: Household income, non-farm livelihood activities, rural farming households

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I.   Introduction

In Africa, various studies have shown that while most rural households are involved in agricultural activities such as livestock, crop or fish production as their main source of livelihood, they also engage in other income generating activities to augment their main source of income[1]. Studies have also shown that agricultural-based livelihood in rural Nigeria has a higher level of poverty than other occupational groups. Rural agriculture is subjected tolocal variations in weather conditions, and thus expected variations in income levels and access to food[2]. Rural Nigeria is characterized by agrarian livelihood as well as other primary production activities such as animal husbandry and fishery activities. Therefore, there is need to diversify sources of income into multiple agricultural and/or non-agricultural income-based livelihood systems. Local non-farming income contributes between 30 to 40 % of rural household income in the developing world[3].

The growing interest in research on rural off-farm and non-farm income in rural economies shows that rural people's livelihoods are derived from diverse sources and are not as overwhelmingly dependent on agriculture as previously assumed[4]. Non-farm local activities include all economic activities in rural areas except agriculture, livestock, fishing and hunting. It includes all off-farming activities, processing, marketing, manufacturing, wage and causal local employment in the rural villages[5].Rural non-farm activities have become an essential component of livelihood strategies among rural households[6,7].The reasons for this observed income diversification include declining farm incomes and desire to insure against agricultural production risk[8].The economy of rural areas in developing country is predominantly based on agriculture and other activities related to agriculture sector[9].Hence, majority of rural population is mainly depending on agriculture sector both for its livelihood and employment. It has been stated that in the rural communities, most households occupied in non-farm activities in order to enhance economic base[10].

There is an increasing trend towards growth of village and rural industries, trade and transportation for providing alternative opportunities of employment as well as for meeting the rising need of the rural people[11]. Non-farm activities are usually divided into two large groups of occupations: high-labour-productivity that leads to high-income activity and low- labour- productivity activities that provide only as residual source of income[12].

Incomes from the non-farm economic activities account for half of the total income in Asia. It also allows more income for rural households[9]. It is universally accepted that when an extreme pressure of population leads to the subsequent addition to labour force, the agricultural sector alone is neither in a position to create additional employment opportunities nor it can provide adequate income to sustain the livelihood of the rural households[9].According to[13], the pattern of income diversification among rural households in Nigeria, showed that majority of the households have fairly diversified income sources. On the average, while only 50% of the total household income is generated from farming, the rest comes from different off-farm sources. However, there are notable differences across income strata. While farming remains the dominant income source for the poorest, off-farm occupation especially self-employed activities are the main sources of income for relatively richer households. Also, [14] using regression models, showed that households have unequal abilities to diversify their income sources and that education, asset, endowment, access to credit, and good infrastructure conditions, increase the levels of household diversification. These factors improve the opportunity to start own business and find employment in the higher paying non-farm sector.However, the growth of rural non-farm employment during this period is largely attributed to an increase in the proportion of casual workers in the unorganized sector, rather than full time employment or increases the number of rural non-farm producers[15,16]. Now, the non-farm activities are greatly helping to increase the household income of the rural people but the surveyed literatures do not describe how non-farm activities are generating household income in rural areas and not comparing the contribution of farm and non-farm activities in income generation.Therefore, this studyattempted to analyse the contribution of nonfarm livelihood activities to overall household income of rural farming households in rural areas of Oyo State.

II. Methodology

Description of the study area

The area of study is Oyo State. It was created in 1976 with total area covering 27,249 km2. It is bounded in the south by Ogun State, in the north by Kwara State, west partly bounded by Ogun State and partly by Republic of Benin, east bounded by Osun State[17].

The ecological zone of this area ranges from rain forest and mangrove forest. The rainfall ranges from 2500 to 3000 mm per annum, which is distributed over April to October with a spell of dry period between late July and early August. Agricultural sector forms the base of the overall development thrusts of the area being the mainstay of the State economy cannot be over-emphasized, with farming as the main occupation of the people. Crops usually grown include Maize, Yam, Cassava, Cocoyam, Melon, Cowpea, Cashew and Vegetables under mixed cropping practices. Apart from the primary roles of providing food and shelter, employment, industrial raw materials, it remains an important source of interlay generated revenue in the State. The area is highly urbanized with a population of 5,591,589 [18]. It consists of thirty-three Local Government Areas, (LGAs) with four zonal Agricultural Development Programmes (ADPs) located at Ibadan/Ibarapa, Saki, Ogbomosho and Oyo.

Sampling Procedure and Sample Size

Multistage sampling procedure was used for the study.First stage involved simple random selection of three (3) ADPs zones (Ibadan/Ibarapa, Saki and Ogbomosho) from the four ADPs zones in the State. This was followed by random selection of one local government area (LGA) from each of the selected zones to make a total of three Local Government areas (Ibarapa East from Ibadan/Ibarapa zone, Saki West from Saki zone, and Ogbomosho South from Ogbomosho zone). The next stage involved randomly selection of five villages from each of the local government areas to make a total of 15 villages (Abule Oba, Ilo Ogundele, Lanlate, Sango Odo, Aiyegbede from Ibarapa East and Ekokan, Aba Ilero, Igbo Olosan, Asabari, Idi Ayin from Saki West and Alokunsoro (Ode Ajala) I, Ile Ajo Abepe, Idi Isin, Ode Olokoo, Ode Baale Lagbedu I from Ogbomosho South). Finally, fourteen (14) farming households were randomly selected from each of the selected villages to give a total of 210 respondents which constituted the sample size for the study. However, after the field work was completed, 170(80.95%) questionnaires were returned and used for analysis.

Data Collection and Analysis

A well-structured questionnaire and interview schedule comprising open and close ended questions were used to elicit information from the respondents which were randomly selected using multistage sampling procedure. The data generated were subjected to Descriptive analysis (using frequency distribution, percentages and mean), and contribution of non-farm income to household income was analyzed using Herfindahl diversity index.

Herfindahl Diversity Index (d)

Herfindahl Diversity Index (D), which is derived from the Herfindahl Index (H) as used in [19] and others authors. The Herfindahl Index (H) which originates in the industrial literature where it is used to measure the degree of industry concentration. It can be used to measure the degree of concentration of income from various sources at the individual household level. It is then calculated as the sum of squares of income shares from each income sources[20]. The Herfindahl Index as such is increasing in concentration, whereby households with perfect specialization: that is, having one source of income, have a value of one. As we are interested in diversification, which is the inverse of concentration, we use the Herfindahl Diversity Index which is defines as one minus the Herfindahl Index. Thus, households with the most diversified income sources have the largest HDI and vice versa. The Herfindahl Index is computed as

$$H = \sum_{J=1}^{n} s_j^{\alpha} \qquad (1)$$

$$D = 1 - \sum_{J=1}^{n} s_j^{2} \qquad (2)$$

Where,
D = Diversification index
S_j=Share of income from income source j of the household [$S_j = Y_j / Y$]
Y_j =totalincome from source j
Y = the total income from all sources; j = 1, 2, 3 … n
α = 2, the diversity parameter (Herfindahl index)
n is the number of income sources

III. Results and Discussion

Personal characteristics of the respondents

The resultof socioeconomics characteristics of the respondents was presented in Table 1.The result revealed that about 34.7% of the farmers were female while about 65.3% of them were male in the sample population. This implies that more males engage in farming activities than female which implies that male households dominated the captured respondents in the study area and this is in line with the finding of [21].While married household heads were in the majority (78.2%) with 64.2% household size with mean household size of 5, therefore they have the possibility of making use of family labour andwill result to reduced cost of production. Also, this is in conformity with [22], who reported that farmers with large household size has a positiveimplication on income diversification because farmers with large household sizeneed additional income to meet family needs.With respect to the educational status of the respondents, 75.3% of the respondents had one form of education or the other while only 24.7% had no formal education. This implies that most of the respondents have one form of formal education or the other. The finding is consistent with the profile (i.e. poor education) of the rural poor in Africa given by[23].

Table 1: Distribution of respondents based on their Personal characteristics

Variables	Frequency	Percentages (%)
Gender		
Female	59	34.7
Male	111	65.3
Marital Status		
Single	19	11.2
Married	133	78.2
Divorced/Widowed	18	10.6
Household Size		
0-4	61	35.9
5-9	106	62.4
10 and Above	3	1.8
Educational Status		
No formal education	42	24.7
Primary	44	25.9
Secondary	47	27.6
Tertiary	37	21.8

Respondents' access to credit facilities

Table two presents the results of analysis on the access of the rural farming households to credit facilities and the amount obtained. According to the results, higher proportion (60.6%) of the rural farming households did not have access to credit while 18.76% of the households had access to credit of about ₦100,001-200,000, 18.24% had access to about ₦20,001-100,000while only 1.2% and 1.2% had access to credit of more than₦ 200,000 and less than ₦20,000, respectively. This reveals that households with access to credit might be able to meet their basic needs than those who had no access to credit facilities. Also, disparity in income distribution among households with access to credit was higher than those without access to credit. This is suggestive of low level of credit among rural farming households in the study area.

Table 2: Distribution of respondents based on their access to credit

Access to credit(₦)	Frequency	Percentage
None	103	60.6
less than 20,000	2	1.2
20,001-100,000	31	18.24
100,001-200,000	32	18.76
200,001-300,000	2	1.2

Engagement in farming and non-farm activities

The results of analysis of the engagement of rural farming household in farming and non-farm activities are presented in Table 3. The table reveals that, 47.6% of the respondents are into farming activities while 52.4% are into one non-farm activity or the other. It could therefore be deduced that majority of the respondents are into non-farm activities and this emphasized the growing importance of non-farm activities in the rural economy and also agrees with findings of [24], that in Nigeria, almost all households have at least some off-farm incomeon the average.Non-farm activities engaged in includes; Artisans (Tailoring Blacksmiths, Mechanics, Hair dressing etc.) which accounted for 8.2% of respondents, Trading, Labour of other farms, Private business, Civil service and other-paid jobs accounted for 14.1%, 1.2%, 5.9%,21.2% and 1.8%, respectively. The distribution clearly shows that civil service job is the most important source of non-farm activities in term of employment generation.

Table 3: Distribution of respondents based on their engagement in farming and non-farm activities

Activity Engaged in	Frequency	Percentage
Farm activities	81	47.6
Non-farm activities	89	52.4
Non-Farm Activities Engaged in		
Trading	24	14.1
Artisan/Craftwork	14	8.2
Labour of other farms	2	1.2
Private business	10	5.9
Civil servant	36	21.2
Other paid employment	3	1.8

Contributions of non-farm activities to household income

Table 4 shows the farm income sources to be 78% of the total income of rural farm households while almost 21.5% came from non-farm sources. The table shows that Eight million, five hundred and one thousand, nine hundred and thirty-three naira (N8,501,933) was generated from farming activity by respondents in the study area while Two million, three hundred and thirty-two thousand and one naira only (N2,332,001) was generated from non-farm activity per year by the respondents. This result is similar to that estimated by [25]. This shows that farm income was the most important source of income for the farm household income. However, the fact that non-farm income forms 21.5 per-cent of farm households' income was an evidence of the growing importance of non-farm income in the study area. And this confirms that non-farm income generating activities are important income generating activities in rural livelihood diversification.

This result is similar to that of [26] which noted that some households are "pushed" to diversify their activities to non-farm sector to cope with external shocks to their farming activities. This is because it often pays more than farming and generates cash.

Table 4: Distribution of respondents based on source of income

Income source	Sum of income (N)	Percentage share of total income
Crop farming	8,501,933	78%
Total farming income	8,501,933	
Trading	419,000	3.87%

Artisan/craftwork	153,000	1.41%
Labour of other farms	20,000	0.18%
Civil service	1,409,001	13%
Private business	251,000	2.32%
Other paid employment	80,000	0.74%
Total Nonfarm income	2,332,001	21.52%
Total	10,833,934	100%

Herfindahl Diversity Index of Households

From our analysis, the sum of shares of income from all sources was 0.4161. While the overall diversification index of respondents which is one minus the sum of shares of income from all sources is 0.5839.The results revealed a Herfindahl diversity index of 0.4161, which shows a 41.61% level of diversificationfor all households.

IV. Conclusion

This study has shown that non-farm income plays a very important role in augmenting farm income as almost three-quarters of the respondents adopted a combination of farm and nonfarm strategy.Rural non-farm activities are playing great role to create employment opportunity consequently to reduce poverty in rural areas.This is an indication that farming alone is not an adequate source of revenue for the rural households.From all the empirical experiment of the study, this paper concludes that household income level of the rural farmers has increased as some of them are participating in farm activities and others are participating in non-farm activities which help to increase their income.Non-farm activities can remove over dependency on agriculture. Therefore, non-farm activities should be accorded recognition and encouraged to flourish.

V. Recommendations

Engagement in non-farm activities, apart from reducing income uncertainties and providing a source of liquidity in areas where credit is constrained, could increase agricultural productivity as it provides the resources necessary for investment in advanced agricultural technologies. The adoption of better technology is expected to be highly profitable and will encourage the transition from traditional to modern agriculture. Therefore, there is a need for the government to formulate policies to increase the availability of non-farm jobs in the rural areas. Further, the private sector should be encouraged to create income-generating activities in the rural areas to enhance their livelihood diversification activities and ultimately their living standard.

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