

Original Research Article

LIVELIHOOD AND INCOME DIVERSIFICATION STRATEGIES AMONG FARM HOUSEHOLDS IN NIGER STATE, NIGERIA --- The author has not specify what type of households this study was focusing on. Is it rural or urban households? This has also affect the interpretation because the livelihood activities carried out in the rural area is not the same with urban.

ABSTRACT

Poverty incidence in Nigeria is higher among the rural-folks, that is, households that rely mainly on agricultural income. Income diversification is therefore seen as a way to secure income and to increase welfare of the farm households. This study investigated livelihood and income diversification strategies among farm households in Niger State, Nigeria. The study utilized data obtained from administering questionnaire to 287 farming households. Data were analyzed using descriptive statistics, and Herfindahl diversification index. The study revealed that Farm income accounted for 63%, while off-farm income accounted for 37% of the total income of the sampled farm households. Majority (what do you mean by "majority"? What is the percentage?) of the farm households had more than one source of income, meanwhile non-farm activities identified in the study area are:—were Fforest pProduction, aAgricultural tTrading bBusiness, aAgricultural pProcessing, bBusiness (fuel, telecommunication services, spare parts dealers, etc), tTransportation bBusiness, bBlacksmith, cCivil Service, dDomestic dDuties, hHandcraft, aArtisanship, cConstruction wWorker, tTailoring, hHealth wWorker, and tTraditional mMedical pPractitioner which jointly accounted for 93.96% participation rate and 36.9% of the total income. The result of income diversification pattern and strategies adopted by the respondents were full time farming, farmer and farm worker, farm and skilled non-farm, and mixed (from all these activities). The study therefore recommend that farm households should diversify their sources of livelihood into non-farm activities like agricultural trading business, businesses (fuel, telecommunication services, etc), and transportation business so as to increase their earnings to bridge the poverty gap and improve their livelihood. — How? This is an ambiguous recommendation

Keywords: Pattern, Diversification, Herfindahl index, Farm Households.

INTRODUCTION

Poverty incidence in Nigeria is higher among the rural-folks, that is, households that rely mainly on agricultural income (Oyekale, Adeoti, and Oyekale, 2006; Oni and Yusuf, 2008; Babatunde, Olorunsanya and Adejola, 2008). Meanwhile, it has been established that in many rural areas, agriculture alone does not provide sufficient livelihood opportunities, hence diversification into non-farm activities is seen as a form of self-insurance. This is because diversification offers people options for coping with crisis. The resultant effect of this is that rural households diversify their income sources by combining two or more jobs (multiple job holdings) to enhance consumption smoothing and acquire other basic needs (Oluwatayo, 2009). Hoekman, Michalopoulos, Schiff and Tarr (2001), pointed out that for growth to have some meaningful impact on poverty, that growth must occur in sectors in which a large proportion of the poor derive their livelihood. It is worth noting that the agricultural sector remains the important sector for livelihood especially in rural Nigeria, which accounts for more than 70% of the population.

Several authors, (Cai, De Janvry and Sadoulet, 2008; Islam and Choe, 2009; Lanjouw and Murgai, 2009), suggested that non-farm income can complement agricultural income in poverty reduction. In the same vein, Ellis (2000); Awoyemi (2004); Babatunde and Qaim (2009), observed that besides the opportunity for income diversification and reduction of income variability/risks, that participation in non-farm activities offer the predominantly peasant farmers in Africa, non-farm activities could also be important means of raising financial capital among farming families. Quite a number of studies in Nigeria, (Okali, Okpara and Olawoye, 2001; Oluwatayo, 2009) also suggested that income from household members' participation in non-farm activities has been contributing significantly to farm households' welfare. Lending credence to this, the Department for International Development (DFID) (2004) reported that as much as 60 per cent of an average Nigerian farm household's cash incomes were derived from non-farm activities. Enterprise diversification is one method of reducing income variability (Mishra, Erickson, Harris, Hallahan, and Uematsu, 2007). Fikru (2008) affirmed that involvement in supplementary activities is positively related to farm productivity and contributes to poverty reduction. Household income variability has also been proven to be reduced by off farm employment (Mishra and Goodwin, 1997; Mishra, *et al.*, 2007).

Diversification is defined as the act of introducing variety, especially in investments or in the variety of goods and services offered. Income diversification refers to an increase in the number of sources of income or the balance among the different sources of income. When linked to farm and non-farm activities in the rural areas, income diversification is often used to describe the expansion in the importance of non-farm income. Thus, diversification into non-farm activities usually implies more diversity in income sources (Minot, Epprecht, Anh and Trung, 2006). Rural households are generally engaged in a wide variety of on and off-farm activities. Specific activities are carried out to generate means for fulfilling these basic necessities of life from the assets they have. These activities include crop and livestock production, fishing, hunting, fuel collecting, bartering, and other endeavours and income generating activities including off-farm work. It varies significantly within a country and across the countries. The livelihood of the rural household essentially revolves around the farm activities and non-farm source of income. The household allocates capital between farm and non-farm income earning activities. Reardon, and Barrett (2000) recognized the importance of income and asset diversification in Africa for at least the next several decades due to both push and pull factors of diversification. Factor such as high contribution of diversification to total income, the expansion of market access, the shift from production of traditional goods to modern goods, the expansion of non farm sector, urbanization and infrastructure improvements were regarded as push factors while market variability, climatic risks, resources constraints which forces household to engage in diverse activities were categorized as pull factors. Shittu *et. al.*, (2005) suggest that non-farm source contributes about half of the rural farming households' income. In line with this, Awoniyi and Salman (2009) pointed out that farming households which are not involved in non-farm activities are more vulnerable to poverty when compared with farming households that engaged in non-farm income generating activities. The income diversification literature converges on an estimate of roughly 40 percent of African rural household income on average being derived from non-farm sources (Bryceson, 1999; Fikru, 2008). The non-farm sector offers potential to absorb a growing rural labour force, slow rural-urban migration, contributes to national income growth, and promotes a more equitable distribution of income (Lanjouw, 1997; Fikru, 2008). The higher the degree of diversification of households, the better-off they are in terms of total income (Fikru, 2008). Lending credence to this, Delil (2001) pointed out that farm households who diversified their productive activities to off farm economy are found to be

98 better off as compared to those who confined their operation to the farm sector, implying the
99 significant impact of off farm employment and income on poverty alleviation and full time
100 off farm operators are the members of the worst poverty ridden groups. Ellis (1998)
101 summarized the literature on rural livelihood diversification and household strategies in
102 developing countries. Income sources are primarily grouped into farm, off farm and non-farm
103 income. He identified two reasons behind livelihood diversification: desperation (poverty,
104 lack of assets, vulnerability, disaster) and; choice and opportunities involving proactive
105 household strategies for improving living standards.

106 Farming deals with uncertain factors such as weather and market conditions. These
107 uncertainties can result in variable returns (farm income) to the decisions farmers make in a
108 particular year. Acute land constraint and absence of well operating land market may prevent
109 households who possess particular skills or abundant labour from exploiting their
110 comparative advantageous position, and seasonality of farming activity results in
111 unemployment and underemployment for a significant proportion of the labour force during
112 most periods of the year.

113 Livelihood diversification among the rural farm households is very important due to
114 population growth, the subsequent progressive shrinking of land holdings size and
115 environmental degradation. It is therefore imperative to carefully analyze the returns to the
116 various farm and non-farm employment opportunities open to the rural folks in the State so as
117 to be able to reduce the level of poverty in the area. The findings of the study are also
118 expected to indicate the policy interventions that might improve rural livelihoods to raise
119 incomes and curb widespread poverty. The objectives of this study were to identify the share
120 of household income from farm and off-farm sources, and describe income diversification
121 patterns and strategies adopted by farm households to stabilize household income.

122 **METHODOLOGY**

123 Insert subtitle: Description of study area

124 The study was conducted in selected Local Government Areas (Don't this selected LGA's
125 have name – include their names) in Niger State of Nigeria. It is one of the 36 States of
126 Nigeria, created out of the defunct North Western State on 3rd February, 1976. Situated in the
127 North central geo-political Zone, the State shares its borders with Zamfara State (North),
128 Kebbi State (North West), Kogi State (South), Kwara (South West), Kaduna (North East)
129 and the FCT (South East). The location of the State is between Latitudes 8° 20¹ and 11° 30¹
130 North of the Equator and also between Longitudes 3° 30¹ and 7° 20¹ East of the Greenwich
131 Meridian. The provisional result of the 2006 National Population Census shows that the
132 State has a population of 3,950,249 (NPC, 2006). Going by the population growth rate in
133 Nigeria of 2.5% (World Bank, 2013), the population of the State was projected to 4,695,604
134 as at 2013. The State comprises 25 Local Government Areas grouped into three agricultural
135 Zones: I, II, III, with each zone having 8, 9 and 8 Local Government Areas (LGAs)
136 respectively. There are three major ethnic groups in the State, *Nupes*, *Gbagyi*, and *Hausa*.
137 Other tribes are *Kadara*, *Koro*, *Dibo*, *Kambari*, *Kakanda*, *Dukkawa*, *Dakarkari*, *Gana-Gana*,
138 *Kamuku*, etc. Niger State covers a total land area of 83,266,779 kilometres or about 8.3
139 million hectares which represent 8% of the total land area of Nigeria. About 85% of the land
140 is arable; the vegetation consists mainly of short and scattered trees. Soils are predominately
141 light and well drained. The State experiences distinct dry and wet seasons with annual
142 rainfall varying from 1,100 mm in the Northern part to 1,600 mm in the southern parts. The
143 temperature ranges from 23°C to 37°C and daylight duration is averagely 8.5 hours and it has
144 a relative humidity of 40%. The major economic activity is agriculture (farming, fishing and
145 livestock rearing) (Discussed this economic activity in detail. You have not included the
146 source – insert reference).

Insert subtitle: Sampling technique and size

Multi-stage sampling technique was employed in the collection of primary data for this study. In the first stage, one Local Government Area was randomly selected from each of the three agricultural zones namely, Zones I, II and III respectively. In the second stage, one community each was randomly selected from the selected LGAs, giving a total of 3 communities. In the third stage, sampling of farm households in each community was determined proportionately using Yamane's (1967) formula and adopted by Agu and Udoh (2012). [See the "reviewer form 1.6" that for more comments](#)

$$n = \frac{N}{1+N(e)^2} \quad (1)$$

Where:

n = sample size,

N = finite population,

e = limit of tolerable error (level of significance = 0.05) and

1 = constant.

Data were collected using structured questionnaire. Data for this study was analyzed using descriptive statistics such as means, frequency, standard deviation, and Herfindahl Diversification Index. This is because, Herfindahl Diversification Index does not only measure the number of income sources or income diversification but also the evenness of income shares, with the parameter determining the weight of the number of sources versus evenness in the distribution of shares. The diversification index is derived as the inverse of the Herfindahl index, following Kaija (2007), and Idowu, Aihonsu, Olubanjo, and Shittu (2011) as follows:

$$D = \sum_{j=1}^n S_j^\alpha \quad (2)$$

Where:

D = Diversification index,

S_j = Share of income source with respect to the total income, $S_j = \frac{Y_j}{Y}$,

Y_j = Total income from source j,

$Y = \sum_{j=1}^n Y_j$ is total household income from all sources; j= 1, 2, 3..... n,

α = Diversity parameter, such as $\alpha \geq 0$ and $\alpha = 1, 2$, and 3.

As α approach 1, the index becomes the entropy-index which was calculated as

$$D = [-\sum S_i \log S_i] \quad (3)$$

Where log is the natural logarithm

For $\alpha = 2$, the index D becomes the inverse of the Herfindahl index which is commonly used as income diversification index. The Herfindahl index was computed as:

$$D = \sum_{j=1}^n S_j^2 \quad (4)$$

$$D = \frac{1}{\sum_{j=1}^n S_j^2} \quad (5)$$

The general index (equation 2) measures the number of income sources and the evenness of income shares across different income source-earner combinations, with the parameter α determining the weight of the number of source-earner combinations versus evenness in the distribution of income shares. The higher the α value, the greater the emphasis on the distribution, while a parameter value of $\alpha = 0$ simply counts the number of income sources. The upper limit value of the index for any α value is the number of income sources and the lowest limit is 1. The lower value occurs when a given household has only one source of

income and the upper value occurs only if the shares are equal, that is, the distribution is even across all income sources. In this study the inverse of the Herfindahl index was used taking $\alpha = 2$.

RESULTS AND DISCUSSION

Results in Table 1 present households participation in different income generating activities and the share of income from the different income sources in the study area. The results revealed that all households (i.e 100%) derived income from farming activities which accounted for 63.34% of the total income. 28.2% received income from Agricultural Trading Businesses which accounted for 15.06% of the total income. 21.6% received income from Petty Trading/Businesses (fuel, telecommunication services, spare part dealer) which accounted for 8.13% of the total income, 16% received income from Transportation Businesses which accounted for 5.89% of the total income, 6.96% received income from ~~Civil Service which accounted for 1.3% of the total income, 4.18% each received income from Agricultural Processing and Artisanhip which accounted for 0.93% and 0.43% respectively, 3.12% received income from Domestic duties which accounted for 0.32% of the total income, 2.43% received income from Tailoring which accounted for 0.35% of the total income, 2.09% received income from Construction work which accounted for 0.71% of the total income, 1.74% received income as Health Worker which accounted 2.97% of the total income, 1.39% received income as Blacksmith which accounted for 0.15% of the total income, 1.04% received income from Handcraft which accounted for 0.43% of the total income, 0.69% received income as Traditional Medical Practitioner which accounted for 0.13% of the total income, and 0.34% received income from Forest Production / Harvesting which accounted for 0.07% of the total income.~~ Discuss the most important and those you want to draw emphasis on.

Agricultural Processing and Artisanhip had the same percentage of participation with total income share of 0.93% and 0.43% respectively; this implies that Agricultural Processing is more profitable than Artisanhip in the study area. In the same vein, Handcraft and Artisanhip had 1.04% and 4.18% participation respectively, with both activities having the same share of the total income which implies that Handcraft making is also more profitable than Artisanhip. Agricultural Trading Business, Petty Trading/Business (fuel, Telecommunication services, spare part dealer, etc), and Transportation Business had the highest participation among non-farm activities in the study area. This implies that apart from farming, majority of the farm households are engaged in non-farm activities so as to increase their total earning (This is meant to be true. The question is what has this research added that is new?). This is consistent with the findings of Ahmed (2012) who found out that farming was the primary occupation of most households in Konduga Local Government Area of Borno State, Nigeria, and that they are also engaged mostly in off-farm activities such as petty trading, matting, tailoring, barbing, telecommunication services, and construction work. This is also in line with the findings of Okere and Shittu (2012) who found out that majority of the households in Odeda Local Government Area of Ogun State, Nigeria are engaged in farming and other non-farm income generating activities like Artisanhip, Trading, Salary jobs, Asset income, and other sources (contractor, Borehole drilling, etc).

Results in Table 2 presents share of households' income from farm and off-farm sources in the study area. The results revealed that the share of household income from farm sources accounted for 63% while off-farm income accounted for 37% of the total households income in the study area. This shows that majority of the farm households in the study area were more engaged in farming activities than off-farm activities. This is in line with the findings of Bryceson (1999) and Fikru (2008) which ascertained that roughly 40% of African rural

household income on the average are being derived from non-farm sources. This is also consistent with the findings of Okere and Shittu (2012) who found out that more than 60% of the total households' income in Odeda Local Government Area of Ogun State is derived from farm sources, while non-farm income generating activities accounted for 40% of the total household income.

Results in Table 3 presents income diversification pattern adopted by farm households in the study area. The measure of income diversification which takes into account the variations in the income shares was estimated using the inverse of Herfindahl index concentration. The higher the number of income sources and/ or the more evenly distributed the income shares, the higher the value of Herfindahl diversification index. Results in Table 3 shows that 8.70% of farm households did not diversify their income generation that is; they depended on a single source of income which was farming. Majority of farm households accounting for 78.80% were moderately diversified, that is, they depended on two income sources. While 12.50% were highly diversified, that is, they depended on more than two sources of income. The mean was 2.2 which implied that majority of farm households in the study area had two sources of income which may limit their total earning (How can two source of income limit household total earning? You need to explain clearly.), this has also lends credence to the result of the diversification strategy. This is in line with findings of Oluwatayo (2009) who revealed that rural households diversify their income sources by combining two or more jobs (multiple job holdings) to enhance consumption smoothing and acquire other basic needs.

The income diversification strategies adopted by farm households to stabilize household income in the study area is presented in Table 4 The income diversification strategies adopted by farm households in the study area presented in Table 4 indicated that 8.7% of all households pursued farming as a full time strategy and it predominates among poorest households with a mean income of ₦ 240,180.00 per annum reflecting the low returns to farming in the study area. This is in line with the finding of Awoniyi and Salman (2009) who found out that farming households which are not involved in non-farm activities are more vulnerable to poverty when compared with farming households that engaged in non-farm income generating activities. The proportion that pursued farmer and farm worker strategy was 15% of the total respondents with mean income of ₦ 683,625.00 per annum which is almost three times higher than that of full time farming. Majority of the sampled households pursued farm and skilled non-farm strategy accounting for 64%, with higher mean income of ₦ 999,455.08 per annum which was higher than the full time farming, and farmer and farm worker strategies respectively. The mixed livelihood strategy, that is, deriving income from all the three sources is associated with the highest average income (₦ 2,842,582.35) per annum and is only adopted by 11.8% of all households. This indicated that livelihood diversification is important towards raising farm household income. This finding is in line with previous studies which have shown that the higher the degree of diversification of households, the better-off they are in terms of total income, that is, richer households have more diversified livelihood strategies while full time farming is more common among poorer households (Brown, Stephens, Ouma, Murithi, and Barrett, 2006; Barrett, Bezuneh and Reardon, 2005; Damite and Negatu, 2004; Fikru, 2008).

The author should include a table and a brief discussion of household's socio-economic characteristics.

Table 1: Household income share by occupation and participation in different activities

*Livelihood activities	Participation (%)	Income Share (%)	Ranking
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290	Farming	100.00	63.34	1 st
291	Forest production	0.34	0.08	14 th
292	Agricultural Trading Business	28.20	15.06	2 nd
293	Agricultural Processing	4.18	0.93	6 th
294	Petty Trading/Business	21.60	8.13	3 rd
295	Transportation Business	16.00	5.99	4 th
296	Blacksmith	1.39	0.16	11 th
297	Civil servant	6.96	1.30	5 th
298	Domestic duties	3.12	0.32	7 th
299	Handcraft	1.04	0.43	12 th
300	Artisans	4.18	0.43	6 th
301	Construction worker	2.09	0.71	9 th
302	Tailoring	2.43	0.35	8 th
303	Health worker	1.74	2.97	10 th
304	Traditional medical practitioner	0.69	0.14	13 th
305	Total	194.00	100.00	

306 *multiple responses

307 Source: Field Survey, 2014.

308

309 **Table 2: Share of household income from farm and off-farm sources**

310	Sources	Total income share	Percentage
311	Farm income	0.625	63.00
312	Off-farm income	0.374	37.00
313	Total	1	100.00

314 Source: Field Survey, 2014.

315

316 **Table 3: Herfindahl diversification index**

317	Level of diversification	Frequency	Percentage
318	Not diversified (HDI = 1)	25	8.70
319	Moderately diversified (HDI >1.0 <=2.0)	226	78.80
320	Highly diversified (HDI >2.0 <=3.0)	36	12.50
321	Total	287	100.00

322 Source: Field Survey, 2014.

323

324 **Table 4: Distribution of households by livelihood strategy and mean income levels**

325	Diversification strategy	Frequency	Percentage	Mean income (₦)
326				Per Annum
327	Full time farming strategy	25	8.70	240, 180.00
328	Farmer and farm worker strategy	43	15.00	683, 625.58
329	Farm and skilled non-farm strategy	185	64.50	999, 455.08
330	Mixed strategy (from all these activities)	34	11.80	2, 842, 582.35
331	Total	287	100.00	

332 Source: Field Survey, 2014.

333

334 CONCLUSION

335 The study concluded that farming households that diversified their income sources had
 336 enhanced their income compare with farming households who do not diversify their income

sources. Richer households tended to be more diversified. Despite the potential of livelihood diversification, only few of the farm households have diversified adequately. The study therefore, recommend that Farm households should diversify their sources of livelihood into non-farm activities like agricultural trading business, businesses (fuel, telecommunication services, etc), and transportation business so as to increase their earnings to bridge the poverty gap.

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