

NON FARM INCOME AND TECHNOLOGY ADOPTION AMONG RURAL FARMERS IN YAGBA EAST LOCAL GOVERNMENT AREA OF KOGI STATE, NIGERIA.

SALIU O.J* AND ADEDAYO F.H.

Department of Agricultural Economics and Extension

Kogi State University

Corresponding author: SalIU O.J. E-mail: josaliu@yahoo.com Tel: 08059955106

ABSTRACT

Rural farmers in Yagba East Local Government Area of Kogi State, Nigeria, have no easy access to loan from commercial banks but engage in non-farm activities to generate income which can be used to supplement fund needs for their farming operations. This study investigated how farmers explore and utilize income from non-farm activities for agricultural technology adoption. Multistage sampling was used to select 108 respondents from the study area. Structured questionnaire was administered to collect data. Descriptive statistics was employed to analyse the data generated. Results indicated that 41.7% of the respondents were within the economically productive age group (31-45 years) and about 88 percent had farm size of between 0.1 to 2 hectares. The most common non-farm activities were small scale cottage industries mostly for processing of farm produce (29.6%). The aggregate income generated was highest (N3,250,000) among those who engaged in the cottage industries. Average income was highest (N915,450) among the petroleum product marketers. Out of the total aggregate of N12,981,419 generated annually, 28.6% was devoted to the purchase of agricultural technologies. Proportion spent on the purchase of fertilizer (27.0%) top the list. This study recommends that both government and non-governmental organizations should engage in capacity building and dissemination of current findings on the identified non-farm activities to enhance better output and increase in income that can be used to enhance agricultural technology adoption.

Key words: Non-farm income, adoption, agricultural technology and rural farmers.

INTRODUCTION

Available statistics have shown that Nigerian rural economy is dominated by agricultural enterprises (Afolabi and Bandipo, 2001). About 94% of all farmers in the country are small holders who produce about 90% of all the nations' food and fibre (Okoro, 1997). Occupations in the rural area are not all farm oriented, various forms of secondary or industrial occupations abound in the area of weaving, carving, leatherwork, carpentry, bicycle repairing, drinking parlour operation, teaching, transport operation and so on (Ekong, 2003).

However, the level and intensity of these numerous non-farm occupations in Nigeria

rural areas are usually overshadowed by agricultural activities. The income generated from the farming activities is nevertheless very low in most cases. The poor performance has been attributed to the type of technology adopted for the production of food.

Technology can be defined as any tool(s) or device(s), method, process that can be applied to make farm activities easier. In Nigeria, agricultural technologies such as tractors, fertilizers, herbicides, improved seed/seedling, breeds of animal, vaccines, dewormers, antibiotics, improved storage facilities, harvesters are available and adopted by Nigerian farmers in varied proportions to improve their farm productivity (Hossain, 2000). Particular

technologies developed locally include the high yielding and disease resistant cassava variety (NR 8082) developed at National Root Crop Research Institute (NRCRI), Umudike, low cost hand operated ginger splitting machine developed in part by National Centre of Agricultural Mechanization (NCAM), Ilorin, which is 75% more efficient than manual splitting. Another technology is the Artificial insemination services of the National Animal Production Research Institute (NAPRI) Zaria, which is supposed to upgrade individual gene of cattle through cross breeding with exotic animals to produce crossbred animals with a genetic potential of about 70% higher milk yield than the indigenous breeds (Falusi, 2004).

If these agricultural technologies are properly adopted, they have the potential to develop Nigeria agricultural sector. However, agricultural technology adoption still suffers a considerable setback partly due to inadequate capital to purchase the technology, which may not enable the farmers to use the improved technology effectively and efficiently. If credit is made available and accessible to farmers it often leads to increase in output. Bernard and Ibrahim (2010) supported this view as they found out that increase in credit supply on agriculture between 1986 and 2008 led to increase in the output of agricultural commodities in Nigeria. However, Rahji and Fakayode (2009) reported that formal national credit policy which is supposed to determine access to needed input to facilitate farming in Nigeria is lacking.

Where credit is even made available, it hardly met the agricultural technology needs of the farmers. Ibitoye (2010) confirmed this assertion in a study conducted on level of credit need of small scale farmers in Kogi State where he found out that, as at the time of carrying out this study, farm credit of about N32,000 would be adequate to meet the extra financial needs on the farm, based on common features of average 2.1 hectares farm size and farm enterprises of yam and cassava mix, maize and sorghum mix, yam

and sorghum mix and cassava and maize mix while an average loan volume of N14,042 was advanced by the financial institutions which was less than 50% loan required for optimum production of the crops under study. Non-farm income can provide capital needed for continuing rural development in general and agricultural technology development in particular.

Ranish and Stewart (2002) defined non-farm income as monetary benefit derived from out of farm economic activities. He further observed that the future size of the rural farm activities would depend on the future growth of the non-farm activities, if income generated from the sector can be improved upon. In a study carried out in some rural communities of Eastern Nigeria, non-farm income has been found to sustain employment and income, provide seasonal occupation for farm workers during less busy times of the year, contribute to poverty alleviation by increasing income of the poor and non-farm activities thereby contributing to the dynamics and equitable growth cycle (Alimba, 1995).

Precisely Haggblade *et al*, (2002) asserted that non-farm income account for 40% of the rural income in Africa. The non-farm income of rural community has what is known as consumption influence on agricultural technology. These are where the income generated from non-farm activities lead to demand for input of farm activities to increase farm productivity.

Statement of the problem

Income generated from farm activities has been described as too little for meaningful saving and reinvestment that will lead to high yield and food security (Nwaru, 2004). Farmers produce just a little above subsistence and save almost nothing that can be ploughed back for expansion of their farm. In Yagba East Local Government Area, small holder farmers dominate the rural communities. Farming is at subsistence level and as such income generated from it is very little. Accessibility and availability of agricultural loan still remain elusive to a lot

of the farming populace and even where available, more than 50% of farmers' credit needs are not met (Ibitoye, 2010). Farmers in this part of the country engage in non-farm income.

Nonfarm activities provide opportunity for additional income for the rural household who are also into agriculture. An enhanced income from non-farm activities assists farmers to purchase improved agricultural technologies which greatly improve agricultural production. How rural farmers in the study area have been able to explore non-farm activities to improve technology adoption, need to be investigated. It is pertinent to know the socio-economic characteristics and types of non-farm activities that farmers in the study area engage in. Are farmers actually investing their non-farm income on the adoption of agricultural technologies?

This and other research questions arising therein will be addressed in this study. The study objectives are to describe the socio-economic characteristics of the farmers, identify the types of non-farm activities engaged upon by the farmers, and to determine the contribution of non-farm income to the adoption of agricultural technology.

METHODOLOGY

Yagba East is one of the 21 Local Government Areas in Kogi State. It shares a common boundary with Mopamuro Local Government in the West, Ekiti State in the South and Yagba West in the North. It is located in the derived guinea savanna of Nigeria on the latitude 8° 10'N and longitude 5° 42' East. The local government has three districts namely; Isanlu, Okeoyi and Ifeolukotun. It has a total population of 219,664 which can be interpreted to mean a population density of 300/km² (FRN, 2007). The people of the study area are

predominantly subsistence farmers. Crop grown include tubers, cereals, cassava and guinea corn. Sheep and goat, poultry and cattle can also be found in a sizeable number. Economic activities such as gari processing industry, tailoring services, weaving, carpentry, auto-repairing, transport operation, electrical and civil service jobs can be found in the area.

Multistage sampling technique was employed. At each stage, random sampling was used to pick three villages from each of the three districts, select 12 farm families from each of the three villages in each district and select one respondent per farm family. This gives 12 respondents per twelve farm families, 36 respondents in a district and a total of 108 respondents for the study.

Primary data were collected through the use of structured questionnaire. Data collected cut across demographic characteristics, type of non-farm activities engaged upon and investment pattern of the income generated from non-farm activities on agricultural technology. Enumerators were trained to assist in the administration of the questionnaire.

Descriptive statistics such as frequency and percentage were used to describe socio-economic variables, type of non-farm income generated and the contribution of non-farm income to the adoption of agricultural technology.

RESULTS AND DISCUSSION

Table 1 shows that about 68.5% of the respondents were males while about 31.8 percent were females. This implies that more males were involved in non-farm activities than the females. About 41.7% of the respondents were within the age range of 31-45 years while respondents of 61 years and above were just 08.3%. This implies that many of the

Table 1: Distribution of Respondents by Socio-economic Characteristics
N=108

Respondents	Frequency	Percentage
Sex		
Male	74	68.5
Female	34	31.5
Age		
20 - 24	30	27.8
25 - 29	45	41.7
30 - 34	24	22.2
35 - 39	09	08.3
Marital Status		
Married	74	68.5
Single	12	11.1
Divorced	7	06.5
Widow	10	09.3
Widower	5	04.6
Educational Level		
Primary	20	18.5
Secondary	15	13.9
Tertiary	22	20.4
Non-literate	51	47.2
Farm Size (ha)		
1 - 1	60	55.6
1.1 - 2	35	32.4
2.1 - 3	10	09.3
3.1 - 4	3	02.8

Source: Field Survey 2007

respondents who involved in non-farm activities were within the economically productive age. This age group may likely adopt modern agricultural technology to boost their production since they are still physically and mentally active in the day to day running of their socio-economic affairs. This is in line with Adisa and Adekunle (2007) who reported that farmers within the ages of 20 - 55 years were easily attracted to non agricultural occupations than older people.

About 68.5% of the respondents were married while only 11.1% were single. The married set of farmers may be more

committed to any activity that will generate income to meet up with their responsibilities. Almost half (47.2%) of the respondents were non-literate. This implies that any technology that requires high technical explanation would demand extra effort to train the non-literate group who dominated the rural community.

The most common farm size was between 0.1 and 2 hectares, held by about 88% of the respondents. This agreed with the finding of Obasi (2007) who reported a mean farm size of 1.37 hectares among farmers in Orlu Zone of Imo State, Nigeria.

Table 2 revealed the types of non-farm activities in the study area. The most

common non-farm activities were smallscale cottage industries, mostly processing of farm produce (29.6%) while marketing of petroleum produce recorded the least percentage. This is contrary to the findings of

Adisa and Adekunle (2007) who reported that trading and commerce was the most common non-farm activities in a similar study conducted in Kwara State.

Table 2: Distribution of Respondents by Types of Non-Farm Activities

Non-Farm Activities	Frequency	Percentage
Trading	10	09.3
Processing of farm produce	32	29.6
Civil service	14	13
Technician/Artisan/Hair plaiting and barbing	13	12.0
Produce buying	15	13.9
Petroleum marketing	2	01.9
Craft making (e.g. basket making)	5	04.6
Transport (motor and motorcycle)	17	15.7
	108	100.00

Source: Field survey 2007.

Table 3 shows an estimate of the income generated from non-farm activities. The aggregate income generated from processing of farm produce annually was the highest (N3,250,000) but almost the least on the average (N10,156) while sales of petroleum products on the average (N915,450) recorded the highest income per head which was followed by average income generated

from road transport operation. The average income generated per annum may also represent profitability of the non-farm activities. This implies that sales of petroleum products may be the most profitable business in the study area. This is in disagreement with Audu and Ejiga (2008) who found out that soap making was most profitable in a similar study in Olamaboro Local Government of Kogi State.

Table 3: Estimate of the income generated from non-farm activities in the study area

Non-farm activities	Annual income generation (₦)	Frequency	Average
Trading	1,200,000	10	120,000.00
Small scale cottage industry from processing of farm produce	3,250,000	32	10,156.25
Civil service	1,000,000	14	71,428,571.00
Technician/Artisan	610,000	13	46,923,076.00
Produce buying	2,600,000	15	173,366.66
Petroleum marketing	1,830,900	2	915,450.00
Craft making/Hair plaiting	780,019	9	86,669.00
Road Transport operation	1,710,000	13	131,538.46
Total		108	

Source: Field survey 2007.

Table 4 indicated the share of the aggregate income from non-farm activities committed to agricultural technology adoption. Generally, out of the total aggregate of N12,981,419 generated annually, 28.6% was devoted to the purchase of agricultural technologies. About 50.1% of the income generated from petroleum marketing was committed to the adoption of Agricultural technology. This was followed by 45.7% from Road transport operation and 44.9%

from craft making. This implies that farmers were willing to invest income from non-farm activities to the adoption of agricultural technology. This finding reveals that the more the non-farm income the more the possibility of farmers investing the income on agricultural technology adoption. This goes to say that non-farm income actually has consumption influence on agricultural technology (Alimba, 1995).

Table 4: Estimate of fund invested in Agricultural Technology from the various non-farm income

Non-farm activities	Income generation (₦)	Fund for agricultural activities	Percentage/Activities
Trading	1,200,000	250,000 (20.83)	20.8
Small scale cottage industry from processing of farm produce	3,250,000	1,165,000 (35.85)	35.9
Civil service	1,000,000	65,000 (6.5)	6.5
Technician/Artisan	610,000	105,000 (17.21)	17.2
Produce buying	2,600,500	1,095,000 (42.11)	42.1
Petroleum marketing	1,830,900	917,000 (50.08)	50.1
Craft making/Hair planting	780,019	35,000 (44.87)	44.9
Road Transport operation	1,710,000	78,000 (45.61)	45.6
Total /Average	12,981,419	3,710,000	28.6

Source: Field survey 2007.

Table 5 shows a breakdown of the total amount invested in the purchase of various Agricultural technologies. Amount spent on the purchase of fertilizer was the highest (27.0%). This was followed by the amount spent on herbicides (22.3%) while

amount spent on livestock vaccine was the least (5.1%). This implies that fertilizer remains one of the inputs that farmers commit a very high percentage of their income on. It may also be a reflection of the fact that fertilizer is widely used by farmers in the study area (Awe et al; 2007).

Table 5: Breakdown of Total Amount Invested in Agricultural Technology Adoption from Non-farm Income

Type of Technology	Amount Invested	Percentage
Fertilizer	1,005,000	27.1
Herbicides	830,000	22.4
Improved seed/seedling	413,000	11.1
Livestock feed	494,000	13.3
Vaccination of livestock	217,000	05.9
Improved Housing	441,000	11.9
Antibiotics/Disease Control Drugs	310,000	08.4
Total	3,710,000	100.00

Source: Field survey 2007.

CONCLUSION

The growth of the rural economy has been found to depend not only on agricultural development but other rural non-farm activities. A substantial amount of income generated from the non-farm activities were found to be utilized for the adoption of agricultural technologies. There is therefore a strong link between farm and non-farm income. It is essential therefore that: capacity building and dissemination of current findings should be extended to non-farm activities in the rural community, as it will enhance agricultural technology adoption, improve farm output and food security.

RECOMMENDATIONS

There should be capacity building for the identified non-farm activities especially processing of farm produce, technician and road transportation, which were commonly engaged upon by the rural farmers. This is expected to boost their knowledge and skill, which will have direct and positive effect on farm output.

Information dissemination on current findings should not be limited to agricultural technology adoption but on the identified non-farm activities

Rural development experts in the various identified non-farm activities should be put in place by both Government and non-Governmental agencies to visit rural communities for the purpose of enhancing productivity in their chosen non-farm activities.

Credit facilities should be made available for the identified non farm activities to further strengthen their financial status for total rural development.

REFERENCES

Adisa R.S. and Adekunle O.A. (2007) Information and Communication Technology in non-Agricultural Enterprises for Rural Transformation in

Kwara State, Nigeria. International Journal of Agriculture and Rural Development. Vol.9, pp.16-21.

Afolabi, A.O. and Bandipo, J.O. (2001). Enhancing Rural Farmers' Economic Potentials through Appropriate Technology in Ijere M.O. (ed) Rural Farmers in Nigeria Enugu, Arena Publisher pp.120-150.

Alimba, J.O. (1995). Linkage between farm and non-farm sector of the Nigerian Rural Economy. Rural Development in Nigeria. Concept, Processes and Projects in Eboh, F.C. Okoje, C and Auchu (eds). Enugu, Nigeria, Auto Century Publishers Company Limited pp.31 41.

Audu, S.I. and Ejiga, M.U. (2008) Economic Analysis of Selected Cottage Industries among Rural Households in Olamaboro Local Government Area, Kogi State Nigeria, Nigerian Journal of Rural Sociology 8(2) 41 45.

Awe, O.A., Thogonguzee T.K. and Adegbeye M.A. (2007). Survey of Soil Fertility Management Techniques used by Small Holders on the Jos Plateau. In Olufajo, O.O., Omokere, D.F., Akpa, G.H. and S.A. Sanni (eds). Reviving Agriculture for Sustainable National Growth and Stable Democracy. **Proceeding of the 41st Annual Conference of the Agricultural Society of Nigeria (ASN)** Held at IAR-Samaru, ABU Zaria, Nigeria. Oct. 22 26, pp.522 526.

Bernard, O.A. and Ibrahim M.K. (2010). Empirical Analysis of Credit Supply and Agricultural Output in Nigeria. International Journal of Agricultural and Rural Development and Extension, University of Abuja 1(1) 117 124.

Ekong, E.E. (2003). **An Introduction to Rural Sociology**. Second Edition. Dove Publishers Limited, pp.58 90.

Falusi, J.B. (2004). Change Agent in Technological Transfer Process of Facilitating Peasant Farmers Productivity. Increasing Productivity in Nigeria, **Proceeding of National Conference on Productivity**. Pp.454 461.

- Federal Republic of Nigeria (FRN, 2007). Federal Republic of Nigeria Official Gazette 94(24) 182.
- Haggblade S; Hazel, P.B. and Reardon T. (2002). Strategies for Stimulating Poverty Alleviating Growth in the Rural Non-Farm Economy. <http://econpaper.Hbs.se/paper/preppeddp/92/htm>. Retrieved: 7th August, 2007.
- Hossain, M. (2000). Rural non-farm Employment. A Review of the State of the Art. Rural Development Paper No.4 Department of Agricultural Economics, East Lansing, Michigan State University.
- Ibitoye, J.S. (2010). Linear Programming Optimum farm credit need of small scale farmers in Kogi State, Nigeria. *International Journal of Agricultural and Rural Development*, University of Abuja 1(1) 67-73.
- Nwaru, J.C. (2004). Rural Credit Market and Resource use in Arable Crop Production in Imo State of Nigeria. Ph.D Dissertation, Michael Okpara University of Agriculture Umudike, Nigeria.
- Obasi P.E. (2007). Farm size Productivity Relationship among Arable Crops Farmers in Imo State, Nigeria. *International Journal of Agriculture and Rural Development*. Vol.9 pp.91-99.
- Okoro, F.U. (1997). Fundamentality of Agriculture in National Economy. The Challenges of Agriculture in National Development. Enugu, Optimal Computer Ltd pp.198-200.
- Rahji, M.A.Y. and Fakayode, S.B. (2009). "A Multinomial Logit Analysis of Agricultural Credit Rationing by Commercial Banks in Nigeria. *International Journal of Finance and Economic*. Euro Journal Publishing Inco. 5(4) 116-120.
- Ranish, A. and Stewart, F. (2002). Linkages in Rural Economy Development. A Philippines Case Study. Manila Philippines Institute Development.