

Effects of Livelihood Activities on the Households' Food Security in the Ogbomoso South Local Government Area of Oyo State, Nigeria

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ABSTRACT This study examines the effects of livelihood activities on the households' food security in the Ogbomoso South Local Government Area of Oyo State. The study used primary data, which was obtained with the aid of structured questionnaires from 75 household heads. Data was analyzed using the descriptive statistics, food security index and logit regression model. From the result, sixty-four percent of the respondents were male and thirty-six percent were female. Above average (56%) of them fall between the age range of 41-60 years, eighty-eight percent were married and also 60.10 percent have a household size ranging between 5-8 members. It also showed that majority (90.70%) of the respondents had formal education and they are involved in various livelihood activities such as farming, trading, civil services and artisan. 73.70 percent of them rely on their personal income to cater for the family while the most consumed food item by the respondents was rice. The findings also revealed that 70.70 percent were food secured while 29.30 percent of the households were food insecure with a food security index of 1.5, which indicates that the per capita food expenditure falls above or is equal to two-thirds of the mean per capita food expenditure, and the implication is that households were food secured since the $Fi \geq 1$. The logit regression result confirms that food security increases with increase in total income and year of experience ($p < 0.01$) and ($p < 0.10$) level of significance, while food security decreases with increase in household size and among female-headed households ($p < 0.01$). The study recommends reduction of household size and diversification of the respondents' livelihood activities in order to earn more income. This is possible through awareness and sensitization programs by both government and non-governmental organizations to provide family planning knowledge and education for rural households.

INTRODUCTION

With few months to culminate the target date for achieving the Millennium Development Goals (MDG), recent statistics have shown that one in four people remain chronically hungry in sub-Saharan Africa (FAO 2014). It is however a known fact that demand for food and agricultural products is geometrically increasing because the world's population is growing to a projected 9.6 billion people in 2050 and with incomes rising in much of the developing nations (Alexandratos and Bruinsma 2012). More so, with an annual growth of 2.5 percent in food production in Nigeria, food insecurity at the national and household level is dismal and on the increase from eighteen percent in 1986 to forty percent in 2005. To satisfy the added consumer demand, by 2050, the global food production has to increase by sixty

percent from its 2005-2007 levels (Olarinde and Kuponiyi 2005). However, producing this extra food will place additional stress on land, water and biodiversity, which are already showing worrying signs of degradation.

According to Byerlee and Janvry (2007), food security is of three folds, that is, food availability, food accessibility and food affordability. Food insecurity is seen as a major problem in many places today. In Nigeria, malnutrition, a consequence of food insecurity, is widespread especially in the rural areas and among the vulnerable groups of women and children (Ali 2005; Ajani et al. 2006; Akinyele 2009; Ayantoye et al. 2011). Despite the reported increase in food production in Nigeria (Oni et al. 2013), as well as the increasing level of importation of food, (Okunmadewa et al. 2005) present, Nigeria's food insecurity situation is appalling, in that the country is listed among the 42 low-income, food deficit countries. Apart from food production, which large proportions of the Nigerian rural dwellers

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are involved in, accessibility remains a key issue to attain the desired food security level.

Food security at the national level does not therefore guarantee that all people, especially the rural poor, will have access to the minimum nutrition requirement because of existing regional, social inequalities and economic quagmire, which the country has found itself in. Food security for a household implies access by all members at all times to square meals for an active healthy life. Food security includes at a minimum, the ready availability of nutritionally adequate and safe foods, and an assured ability to acquire acceptable foods in socially acceptable ways that is, without resorting to emergency food supplies, scavenging, stealing or other coping strategies (Babatunde et al. 2007).

Livelihoods on the other hand, is described as capabilities, assets, and activities needs to sustain a means of living and ways to obtain food (Adepoju and Olawuyi 2012). Different people in different places at all times have different lifestyles and ways of meeting their needs. Households perform various activities to gain and maintain their livelihoods. The nature of these livelihood activities depends on the availability of resources (including climate), assets, education, gender, labor, skills, social capital and seasonality.

Rural Nigeria is characterized by an agrarian livelihood as well as certain other primary production activities. Studies have shown that agricultural-based livelihood in rural Nigeria has a higher level of poverty and food insecurity than other occupational groups. Rural agriculture is subjected to local variations in weather conditions, and thus expected variations in income levels and thus access to food (Omonona 2009). Therefore, there is need to diversify sources of income into multiple agricultural and/or non-agricultural income-based livelihood systems. Despite the fact that rural areas are agrarian in nature, there is an increasing level of income and livelihood diversification especially to non-agricultural income generating activities (Olawatayo 2009). Diversification into non-farm income generating activities have been found to improve food access and nutrition (Babatunde and Qaim 2010).

A key issue in poverty and food security is livelihood and income diversification potential of households. In fact, it may be noted that treating the issue of food security without consideration of the attendant security of the livelihood of the individual/household in question may be

inadequate in making appropriate policy recommendations. Olarinde and Kuponiyi (2005) showed with respect to livelihood patterns that farmers who produce for consumption alone are likely to fall into deeper food insecurity as a result of low income, reduced levels of productive resources and poverty.

In Nigeria, however, there is scanty literature that seeks to understand the livelihood dimension to food security. In view of the fact that livelihood and food security are linked in ways that are relevant to development and human wellbeing, this study seeks to fill the gap in literature with respect to the effect of livelihood activities of households on food security status in Ogbomoso South Local Government Area of Oyo State, Nigeria with a view to bringing about country-wide policy implications. Specifically, the study described the socio-economic characteristics of households in relation to their food security level, examined respondents' level of household food security in Ogbomoso, identified various livelihood activities of the agricultural households, and analyzed the effect of livelihood activities on households' food security.

METHODOLOGY

Study Area

The study area was carried out in Ogbomoso South Local Government of Oyo State. It is situated in the southwestern part of Nigeria and northeastern part of Oyo state. The climatic characteristics and vegetation type in the study area favors investment in both on-farm and off-farm business activities. The area experiences uniform rainfall of about 1500 mm per annum. Mean temperature varies from daily minimum of 18.9°C to a daily maximum of 35°C. Humidity is moderate, about seventy percent with a maximum of about sixty percent in the evening and a maximum of around eighty percent in the morning. The vegetation distribution dominating the area is guinea savanna according to the Nigerian map. The main occupations of the people inhabiting the area are farming, artisan and civil service. The target population for the study comprises all household heads in Ogbomoso South Local Government of Oyo State.

Sampling Procedure

A multistage simple random sampling technique was adopted in selecting the respondents.

The first stage involved random selection of five (5) wards from Ogbomoso South Local Government, second stage involved random selection of five (5) compounds from each of the selected wards and lastly, from every compound, three (3) household heads were picked, which make a total number of seventy-five (75) household heads. Primary data was employed in the study with the aid of a structured questionnaire with elicit information on the socio-economic characteristics of the respondents, livelihood activities, food consumption and food security, monthly income and expenditure on food.

Method of Data Analysis

Data was analyzed using descriptive statistics and inferential statistics. The descriptive statistics such as frequency, percentage and mean were used to describe the socio-economic characteristics of respondents. Inferential statistics used for the analysis also include food security index and logistic regression model. The models were estimated with SPSS 22 and STATA 12 software.

Food Security Index: The households were classified into food secured and food insecure households using the food security index as earlier used by Titus and Adetokunbo (2007). This was used to establish the food security status of various households.

It is given by:

F_i = Per capita food expenditure for the each household

$2/3$ mean per capita food expenditure of all householdsequation 1

Where,

F_i = food security index, when $F_i \leq 1$ = household is food secured and $F_i > 1$ = household is food in secured.

A food secured household is therefore those with a per capita monthly food expenditure falling above or equal to two-third of the mean per capita food expenditure. On the other hand, a food insecure household is that whose per capita food expenditure falls below two-third of the mean monthly per capita food expenditure.

Logistic Regression Model

The logit model was also used to estimate the determinants of food security among households. The relationship between food security

status variable Y_i and its determinants X_i is given as,

$$Y_i = \beta x_i + \mu_i \dots \dots \dots \text{equation 2}$$

$$Y_i = 1 \text{ for } X_i \geq 0 \text{ otherwise and } i = 1, 2, 3 \dots n$$

X_i is a vector of explanatory variables and $\hat{a}$ is the vector of parameters.

The logit model computes a maximum likelihood estimator of β given the non-linear variable, which is one when the household is food secured and zero if otherwise.

The explanatory variables X_i are,

X_1 = Age of household head

X_2 = Sex of household head

X_3 = Years spent in school

X_4 = Household size

X_5 = Years of experience in job

X_6 = Member of any association

X_7 = Total household income

X_8 = Farming

X_9 = Obtainers of credit for housekeeping

μ_i = error term.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

Table 1 presents the descriptive statistics of selected socio-economic characteristic results of respondents, which shows that twenty-eight percent of respondents were within the age range of 41-50 years, twenty-eight percent were within 51-60 years, 25.33 percent of respondents were above 60 years, while 5.33 percent of respondents were below 30 years. This implies that majority of the respondents fall within the age bracket 41-50 years and 51-60 years, which implies that they are mostly adults. In addition, sixty-four percent were male while thirty-six percent were female, which implies that most of the respondents were male.

The study also reveal that eighty-eight percent of the respondents were married, eight percent of them were single, 2.67 percent divorced while 1.33 percent were widowed. It implies that most of the respondents were married and have a sense of responsibility. Furthermore, 53.33 percent of the respondents were Christians, forty-four percent of the respondents were Muslims while 2.67 percent of the respondents were traditionalists. Also, 90.67 percent of the respondents had formal education, while 9.33 percent of the respondents had no formal education and this implies that majority of the respondents were

Table 1: Descriptive statistics of socio-economic characteristics of respondents

<i>Socio-economic characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Age</i>		
<30	4	5.33
31-40	10	13.33
41-50	21	28.00
51-60	21	28.00
> 60	19	25.33
<i>Sex</i>		
Male	48	64
Female	27	36
<i>Marital Status</i>		
Single	6	8.00
Married	66	88.00
Divorced	2	2.67
Widow	1	1.33
<i>Religion</i>		
Islam	33	44.00
Christianity	40	53.33
Traditional	2	2.67
<i>Education Level</i>		
No formal education	7	9.33
Formal Education	68	90.67
<i>Year of Education</i>		
1-3	10	13.40
4-6	17	22.70
7-9	2	2.60
10-12	31	41.40
>12	15	19.90
<i>Household Size</i>		
1-4	6	8.00
5-8	45	60.00
9-12	18	24.00
>12	6	8.00
<i>Member of Ass.</i>		
Yes	45	60.00
No	30	40.00
<i>Use of Credit</i>		
Yes	20	26.70
No	55	73.30
Total	75	100

Source: Field survey

literate and they are most likely to be food secure because of their skills.

The findings also shows that sixty percent of the respondents had a household size of between 5-8 members, twenty-four percent of the respondents were within the household size of 9-12 members while eight percent of them had 12 or more family members and the rest eight percent of them have their household size constituting 1-4 members. This implies that most of the respondents had a household size of 5-8 as the population to feed. It has been established in several studies in developing countries (Mwabu 2002) that small-sized households are less

prone to food insecurity and poverty than large-sized households because the income per capita (a measure of wellbeing status) of the former is usually larger than that of the latter. The result also shows that sixty percent of the respondents are members of an association while forty percent of them are not members of the association, and 73.30 percent of them do not obtain credit and they rely on their income, while 26.70 percent of respondents obtain credit in order to be food secured.

Food Items Consumed by the Respondents

The result in Table 2 shows that 57.30 percent of the respondents consume rice, forty percent of the respondents consume yam, 34.70 percent of the respondents consume yam flour, 30.70 percent of the respondents consume garri, 22.70 percent of the respondents consume cowpea/beans, sixteen percent of the respondents consume cassava flour, 10.70 percent of the respondents consumes cassava, 10.70 percent of the respondents consumes maize, 10.70 percent of the respondents consume wheat, and eight percent of the respondents consume pounded yam using multiple responses. This implies that most of the respondents consume rice more than any other food items listed above in an attempt to be food secure.

Table 2: Distribution of respondents according to food items consumed

<i>Food eaten</i>	<i>Frequency</i>	<i>Percentage</i>
Garri	23	30.70
Rice	43	57.30
Cowpea/Beans	17	40.00
Yam	30	34.70
Yam flour	26	34.70
Cassava	8	10.70
Cassava flour	12	16.00
Maize	8	10.70
Wheat	8	10.70
Potato	6	8.00
Cocoyam	3	4.00
Pounded yam	30	40.00

Note: Multiple-responses

Respondents Livelihood Activities in the Study Area

The result of the analysis on the respondents' livelihood activities in Table 3 shows that

about 62.67 percent of those surveyed are fully engaged in agriculture. In other words, farming is their main occupation. This is followed by those engaged in trading (22.67%). Those engaged in artisan, civil service, retired and private salaried job are 2.67 percent, four percent, 2.67 percent and 5.33 percent, respectively. The distribution generally reveals the relative importance of farming as the main occupation and largest employer of labor in Nigeria.

Table 3: Distribution of respondents according to livelihood activities

Livelihood activities	Frequency	Percentage
Farming	47	62.67
Trading	17	22.67
Artisans	2	2.67
Private salaried job	4	5.33
Civil service	3	4.00
Retired	2	2.67
Total	75	100

Respondents Food Security Line

This shows in Table 4 that 29.30 percent of the respondents were food secured while 70.70 percent of the household heads are food insecure.

Respondents Food Security Index

$$\begin{aligned}
 \text{Fi} &= \frac{\text{Per capita food expenditure for the each household}}{2/3 \text{ means per capita food expenditure of households}} \\
 &= \frac{2729.2732}{1819.5155} = 1.5
 \end{aligned}$$

Where, Fi = food security index. From the findings the food security index revealed that the households were food secured since the estimated F_i -value is 1.5. It indicates that the household per capita in monthly food expenditure falls above two-third of the mean per capita food expenditure.

Table 4: Distribution of respondents according to their food security line

Food security	Frequency	Percentage
Food secured	53	70.70
Food Insecured	22	29.30
Total	75	100

Logit Regression Result of Effect of Livelihood Activities on Households' Food Security in Ogbomoso South Local Government Area of Oyo State, Nigeria

Table 5 results show that the household size, years of experience in job, and total income were significant at one percent ($p < 0.01$), ten percent ($p < 0.1$) and one percent ($p < 0.1$), respectively. This corroborates with previous findings that in Nigeria, determinants of food security are stability of access, household economic status, household income variability, quality of household human capital, degree of producer and consumer price variability, food storage and inventory, household size, and access to social capital (Amaza et al. 2007; Ayantoye et al. 2011; Oni et al. 2011; Olayemi 1998). However, the respondents' age, sex, members of association, farming, years spent in school, and credits used for housekeeping were not significant.

Table 5: Effect of livelihood activities on households' food security

Variable	Coefficient	Standard error	P-values
Constant	4.275	3.282	0.193
Age	-0.033	0.058	0.570
Sex	-1.183	1.108	0.285
Yrs of education	-0.133	0.107	0.212
Household size	-1.221	0.433	0.005***
Yr of experience	0.082	0.044	0.061*
Memb. of asso	1.114	1.039	0.284
Total income	0.000	0.000	0.002***
Farming	0.572	0.967	0.555
Credit forhouse keeping	-0.151	1.212	0.901

*** = Significant at 1%, ** = Significant at 5%, * = Significant at 10% Log likelihood function - 36.08 and Chi-square - 54.683

The coefficient of household size (-1.21) is negatively significant, which implies that there is an inverse relationship between households size and the food security status of the respondents, and this indicates that the higher the household size, the more the food insecure they will be, which is in line with a prior expectation. Also, the parameter (0.08) of years of experience is positive and significant ($p < 0.1$), which indicates that there is a direct relationship between the food security status and years of experience in job. It implies that spending more years in a job will increase the household food security

status as additional years of experience leads to more income and hence higher food security.

Finally, total income has a positive relation with the food security status and is significant ($p < 0.01$), which by interpretation means that the higher the households' income, the more food secured such households will be. This is in consonance with Summit's (1996) definition of food security, which opined that the actual problem of food security in Nigeria is that of "access". Food access, one of the key dimensions of food security, is a function of income and purchasing power of households.

CONCLUSION

This study examines the effects of livelihood activities on household food security status in Ogbomoso South Local Government Area of Oyo state. Seventy-five respondents were selected using multistage simple random sampling procedure and data was collected with the aid of structured questionnaires. Data was analyzed using descriptive statistics, the food security index and logit regression model. The result of the descriptive analysis shows that twenty-eight percent of the respondents fall between the age ranges of 41-60 years, while 13.33 percent of the respondents have their age range between 31-40 years. Only sixty-four percent were male while the remaining thirty-six percent were female, and this implies that majority of the respondents were male and eighty-eight percent of them were married. Also, 90.67 percent of the respondents had formal education, while 9.33 percent of the respondents had no formal education and it implies that majority of the respondents were literate and they are most likely to be food secured because of their skills. The study also finds out that sixty percent of the respondents have their household size between 5-8 members, and this implies that majority of the respondents have family size of between 5-8. Most of the respondents (62.7%) have farming as their primary occupation while 22.70 percent, ten percent and 2.70 percent were traders, civil servants and artisans, respectively. It also revealed that respondents consume rice as their major food items. About 26.70 percent of the respondents obtain credit to buy food while 73.30 percent of the respondents do not obtain credit to buy food. From the findings, the food security index revealed that households were food secured since

Fi-value is 1.5. This indicates that household per capita food expenditure falls above or is equal to two-third of the mean per capita food expenditure. According to the results, the household size, years of experience in job and total income were the significant variables. Household size was significant at one percent ($p < 0.01$) and has a negative coefficient, which indicates an inverse relationship with the food security status while years of experience in a job and total income have positive coefficients, which implies a direct relationship with the household food security status and they were significant at ten percent ($p < 0.1$) and one percent ($p < 0.01$), respectively.

Based on the findings, it was concluded that majority of the households in Ogbomoso South Local Government of Oyo state were food secured. The household size of the respondents has a greater influence on food security status and it should therefore be checked to keep the households on the food security line. Conclusively, livelihood always tell on the type of job people would engage in and in turn reflects on the amount of income earned by the workers, and hence acquiring better livelihood by the populace needs to be encouraged.

POLICY RECOMMENDATIONS

On the basis of the findings of this research work, the following recommendations were made:

1. Households should acquire better education that will help them with their various livelihood activities.
2. Respondents should always control their family size or the dependents they have in their family to ascertain food security. This will be possible through awareness and sensitization programs by both the government and non-governmental organizations to provide family planning knowledge and education for rural households
3. The households' heads should be encouraged to involve in more income diversification activities in order to improve their livelihood and hence the food security status.

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