



Determinants of Food Security Status among Rural Farm Households in North-Western Nigeria

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Abstract

This study was carried out to examine the factors affecting food security status among rural Farm farmers in Kaduna state, Nigeria. Interview guides were employed to elicit information from randomly selected 180 respondents from 12 agricultural villages from two agricultural zones of Kaduna State. The result of the logistic regression model shows the factors that determine the food security status of the respondents in the study area. It was revealed that two out of the seven variables included in the model were significant. The determinants of food security in the study area were educational level and household size of the respondents. Imparting more knowledge to farmers should be encouraged by the government, recruit more extension workers and give them adequate trainings and provide them with necessary and sufficient working materials so as to educate more farmers to boost their agricultural production activities.

Keywords: Rural Farm households, Food security, educational level.

Introduction

The FAO defines food security as access by all people at all times to safe and nutritious food needed to maintain a healthy and active life. Thus, food security involves not only food production issues but also aspects of distribution, marketing and storage (FAO, 1995). Maxwell (1986) has proposed that a country and people are food secure when their food system operates efficiently in such a way as to remove through own production or through purchase of enough food for an active, healthy life.

It has however been emphasized that food security is a necessary but not sufficient condition to obtain good nutritional status for an active healthy life. In addition to individuals simply having access to enough food, they must procure, ingest and digest it. Generally, whatever is consumed to provide energy and nourishment for the human body for an active and healthy life is termed as food (Okolo, 2004). Food security will therefore be achieved when the poor, the vulnerable, particularly women, children and those living in marginal areas have secure access to the food they want in the appropriate sufficient quantity and quality to cover the need of their

daily ration and food preferences, in order to live a healthy, active life (Sengooba, 1994). A situation where this does not occur indicates food insecurity.

Food insecurity may be chronic or transitory. In chronic food insecurity, there is continuous inadequate diet and nutrition caused by household's inability to acquire food. It therefore afflicts households that persistently lack the ability to either buy food or produce their own. On the other hand, transitory food insecurity results from a temporary decline in household's access to food mainly due to instability in food prices, production, household income or a combination of these factors.

Given the critical roles of adequate food and nutrition in the development process and in supporting world peace and stability, greater attention has been paid to food and nutrition issues at the levels of national government especially in the less developed countries as well as by the international community (World Bank, 1986). The importance of agricultural development to attainment of the goal of economic development policies in Nigeria, which is to establish a balance self-reliant and dynamic economy cannot be overemphasized.

Nigeria is still characterized by high reliance on food imports. Malnutrition is widespread in the entire country and rural areas are especially vulnerable to chronic food shortages, malnutrition, unbalanced nutrition, erratic food supply, poor quality food, high food costs and even total lack of food. This phenomenon cut across all age groups and categories of individuals in the rural areas. There is a high level of malnutrition among children in rural Nigeria; the figures differ with geopolitical zones, with 56 percent reported in a rural area of south-west and 84.3 percent in three rural communities in the northern part of Nigeria (IFPRI, 2009).

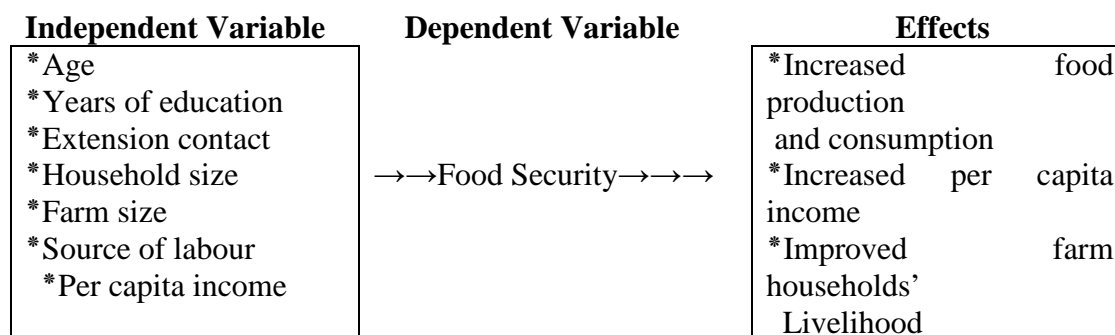
The problem of food and nutrition security in Nigeria has not been adequately and critically analyzed, despite various approaches at addressing the challenges. The food security status of Nigeria is seen from the fact that small holder farmers are the major producers of the food consumed in the country and these farmers have inadequate capacity to produce enough for the country's need (IFPRI, 2009). The federal Government of Nigeria in collaboration with state and Local Government areas as well as external agencies such as World Bank, International Fund for Agricultural Development (IFAD) and African Development Bank (ADB) has initiated several programmes and projects like Agricultural Development Project (ADP), National Special Programme on Food Security (NSPFS), National Fadama Development Programme (NFDP) and Root and Tubers Expansion Programmes (RTEP) in order to assist farmers by providing an enabling environment for their production activities. By sponsoring these programmes and projects, government and donor agencies aimed to achieve food security by ensuring that all the residents in the country have physical and economic access to sufficient food at all times. Apart from the food sufficiency and security, other expected outcomes in all the programmes and projects include increased employment opportunity, reduced post-

harvest losses, improved standard of living, improved quality of life and improved economic status of the farmers and rural dwellers in Nigeria (Ingawa, 2004). This study was carried out to examined the determinants of food security status among rural farm households in Kaduna State, Nigeria.

Conceptual Framework of Household Food Security

The framework (Figure 2.1) basically explains the relationship between the concepts in the study area. In this framework, the independent variables that determine the food security situation have been illustrated in the model. The model shows that with favourable individual characteristics, it is expected that there will be improvement in food security leading to increased in food production and consumption and increased per capita income.

Figure 1: Conceptual model of factors affecting food security situation and effects on farm households in Kaduna state.



Source: Maxwell and Frankenberger (1992)

Methodology

The study was conducted in Kaduna State, located in the Northern Guinea Savannah ecological zone. The state is located between latitude 9°N and 12°N and longitude 6°E and 9°E of the prime meridian. The state occupies an area of about 48, 473.2 square kilometers (FOS, 2006). It has a population of 6,066,562 people (NBS, 2007). The state shares common border with Federal Capital Territory, Abuja in the South-East and six other states, namely; Katsina, Kano and Zamfara to the North-north; Nasarawa, Plateau to the Northeast, Niger to the Northwest. The climate varies from the north to the southern part of the state.

A multi-stage sampling technique was adopted for this study. In the first stage, Maigana and Birnin Gwari zones were purposively selected because these zones are purely agrarian communities. In the second stage, two blocks were randomly selected from each of the two agricultural zones. In the third stage, three cells were

randomly selected from each of the four blocks. Lastly, 10% of households in each of the twelve cells were randomly selected because the farmers are homogenous in terms of production pattern and this percentage can represent the whole population. A total of 180 farm households were used for the study.

The data required for this study were obtained from the farm households using structured questionnaire. The design of these instruments were guided by the general and specific objectives of the study. The data were collected by the researcher with the help of trained enumerators (who can speak the local dialect). The data collected include: socio-economic variables such as age, sex, marital status, farm size, membership of cooperative, household size, educational level as well as food production, consumption and expenditure, per-capita income, amount of credit received and extension contacts.

Analytical Technique

A Logit Regression Model was used to identify the determinants of food security among the respondents. It is a binary choice model in which a dichotomous response variable is considered as the dependent variable (Pindick and Rubinfeld, 1991). The logit model was used for the study instead of linear probability and probit models because according to Gujarati (1995), the logit model guarantees that the estimated probabilities lie in the 0-1 range and that they are not linearly related to the explanatory variables. The logit model is based on the cumulative logistic distribution function expressed below:

$$P_i = E(Y = 1/X_i) = \alpha + \beta_i X_i \quad (1)$$

$$p_i = E \{ Y = 1/X \} = 1/1+e^{-z} \quad (2)$$

For ease of exposition, $z_i = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} \dots \beta_n X_{in}$.

Where P_i = Probability of being food-secured.

The log of odds ratio or the logit (L) = $\ln \left\{ \frac{\text{the probability of being food-secured}}{\text{The probability of not being food-secured}} \right\}$

= $Z_i + u_i$

In order to obtain the value of z_i , the likelihood of observing the sample needs to be formed by introducing a dichotomous dependent variable Y_i such that Y is equal to 1 if the household is food secure and 0 if otherwise. The independent variables hypothesized to determine the food security status among the households are specified as follows:-

X_1 = Age of household head (years)

X_2 = Years of education of household head (years)

X_3 = Extension contact (Number of contacts)

X_4 = Household size (Nos.)

X_5 = Farm size (ha)

X_6 = Source of labour (man-day)

X_7 = Household per capita income (₦/aira)

β_i = The coefficients for the respective variables in the logit function.

Results and Discussion

Determinants of Food Security of Farm Households in the Study Area

The result of the logistic regression model in Table 1 shows the factors that determine the food security status of the respondents in the study area. It was revealed that two out of the seven variables included in the model were significant. These variables were educational level and household size of the respondents.

The coefficient obtained for age was negative suggesting that the older the age the more food insecure the respondents become. This implies that respondents with older age are more prone to food insecurity than those with youthful age. Older age translate into low productive activities which in turn, affects household livelihood improvement strategies.

The educational level was significant on food security. This implies that education equips the people with information and new technologies that are necessary for enhancing their farming and economic activities (Ruel *et al.*, 1998; Oniang'o and Mukudi, 2002).

The household size was also significant. This implies that the large household size is associated with increased labour for farming activities and reduce food insecurity for the family.

The log likelihood of 74.484 and pseudo R² of 0.207 was statistically significant and positive on the overall variables included in the model implying that the fit is good.

Based on the findings of this study, the hypothesis which states that there is no significant relationship between the socio-economic characteristics of farmers and their food security status is rejected while the alternative hypothesis which states that there is significant relationship between the socio-economic characteristics of farmers and their food security status is accepted.

Table 1: Logit regression estimates for determinants of food security status of the respondents

Variables	Coefficient	Standard Error	b/St.Er
Age (X ₁)	-0.0339	0.0187	-1.813 ^{NS}
Educational level (X ₂)	-0.0005	0.0354	-0.016 [*]
Extension contact (X ₃)	0.1244	0.0623	-1.996 ^{NS}
Household size (X ₄)	-0.0102	0.0322	-0.318 ^{**}
Farm size (X ₅)	-0.0404	0.0280	-1.441 ^{NS}
Source of labour (X ₆)	0.4508	0.1824	2.471 ^{NS}
Per capita income (X ₇)	0.9750	0.4133	2.359 ^{NS}
Pseudo R ²		0.207	
Log likelihood		74.484	

**Significant at 5% *Significant at 1% NS- Not Significant

Source: Computed from field survey data, 2013.

Conclusion and Recommendation

This study was carried out to examine the determinants of food security status among rural Farm households in Kaduna state, Nigeria. The study showed that educational level and household size were the main determinants of food security in the study area.

Educational level was significantly related to food security status in the study area, therefore imparting more knowledge to farmers should be encouraged by the government, recruit more extension workers and give them adequate trainings and provide them with necessary and sufficient working materials so as to educate more farmers to boost their agricultural production activities. Household size was also significantly related to food security. Individual farmers should give more attention in their farm labour through increasing the number of the household and labour contributes to the output. As labour increases with other inputs, the output of production also increases. In view of the negative impact of the age of farmers on food security, there is need to encourage the youths in the village to participate vigorously in farming. To achieve the Millennium Development Goal of eradicating hunger in Nigeria, it is recommended that food security strategies should be designed in a way that would focus on and address the identified determinants. Specifically, government and farmers group should provide agricultural inputs to farming households at affordable prices and right time to be able to increase their food production.

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