

Socio-economic Characteristics Affecting Food Security among Rural People in Yola-North Local Government Area of Adamawa State, Nigeria

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ABSTRACT

The study examined the socio-economic characteristics of the respondents affecting food security in Yola-North Local Government Area of Adamawa State, Nigeria. The specific objectives were to: identify the socio-economic characteristics of the respondents; identify the food security status of the respondents; determine the relationship between the socio-economic characteristics and food security status of the respondent; and, identify the problems causing food insecurity in the study area. Multistage sampling technique was employed in sampling the wards, villages and respondents involved in the study. A total of 105 respondents were considered for the study. The data collected were analysed using descriptive statistics (frequencies, percentages and means) and Logit regression is the inferential statistic employed. The major findings show that 59% of the respondents were males and 41% were females. The mean age of the respondents is 42.3 years, implying that most of the respondents were in their agriculturally productive age bracket. Majority (72%) of the respondents have attained at least the postsecondary school level of education. The respondents have an annual mean income of 218,000 naira, which is considered as a low income. The mean farm size is 1.4 hectares and the mean farming experience was 6.7 years. More than half (55%) of the respondents are food secure. Results of the Logit regression analysis show that: level of education (X_5), income (X_6) and household size (X_8) were found to have positive and significant relationships with food security at 5% level of significance, whereas farming experience (X_7) has a positive and significant relationship at 10% level of significance. However, age (X_1), sex (X_2), marital status (X_3) and farm size (X_4) were found to have no significant relationships with food security. It was concluded that the socio-economic characteristics of the respondents have significant effects on food security status of the respondents and their socio-economic characteristics have played important roles in ensuring that their food are secure or insecure as the case applies. The respondents depend mainly on crop production and more than half of them are food secure. It was recommended, among others, that government should provide loans to small-scale farmers without any collaterals or with feasible collateral requirements. Insurance cover should be made mandatory for farmers to alleviate their sufferings and assist them in the event of total crop loss.

Key Words: Socio-economic Characteristics affecting Food Security, Rural People, Nigeria.

INTRODUCTION

It is a widely accepted fact that food is a basic necessity of life. Adequate intake of quality food is a key requirement for healthy and productive life. Helen (2002)

asserted that food is useful for maintaining political stability and ensuring peace among people, while food insecurity can result in poor health and reduced

performance of children. Food security is defined as the state in which people at all times have physical, social and economic access to sufficient and nutritious food that meets their dietary needs for a healthy and active life (World Food Summit, 1996). According to Alamgir et al. (1991), food security means the assured availability of food for individual households to draw on to meet their minimum consumption requirements during a given period. Household food security exists when household members have access to the food needed for a healthy life. A region is food secure when majority of the people in that geopolitical area have access to food of adequate quantity and quality at all times (Fasoyiro, 2012). Food insecurity, on the other hand, therefore, could be understood as the lack of access to the food required in terms of the quantity, quality and nutritional values of the diet in a household.

Lack of sufficient food supply or food insecurity could be said to be a key issue when the problems of developing countries are being discussed. In Nigeria, the majority of the population live in rural areas and depend on agriculture for food and other human needs. Unfortunately, majority of them practice subsistence farming because of the traditional means of production that still characterize their agricultural activities, a situation that gives room for food insecurity. A consensus exists that extension services, if properly designed and implemented, will improve agricultural productivity and hence, improve food security (Romani, 2003; Evenson and Mwabu, 2001). Effective agricultural extension brings about changes in household food security through education and communication, changes in farmers' attitudes, knowledge and skills (Koyenikan, 2008). The role of agricultural extension involves dissemination of information, building the capacity of farmers through the use of a variety of communication methods and helping farmers make informed decisions.

Agricultural extension service is one of the institutions that can change farmers' practice of subsistence farming into modern and commercial agriculture, which can promote household food security and ensure the availability of and access to food throughout the year. Apart from the fact that the number of extension workers in the state was too small to interact frequently with the comparatively large number of farmers, who need extension services in the rural areas, since the inception of Agricultural Development Programmes in Nigeria, the situation has steadily worsened. This has been as a result of no replacement of the extension workers who retired or passed away, for at least over twenty years now. Although this predicament has been known to be a serious bottleneck that has weakened the efforts of extension workers, with the availability of improved technologies in the field of communication, there has been an improvement in their efforts, a rejuvenated work spirit, and at the same time, an easing and facilitation in the conduct of extension services. It is, therefore, needful

that their services be assessed to make known what the use of information and communication technologies has enabled them to do towards ensuring food security among rural farmers. It is against this background that this study was conceived and designed to investigate the types of extension services rendered by agricultural extension workers that could bring about food security in the study area.

Statement of the Problem

Food security is one of the most desired goals in all parts of the world. In fact, food security is even more desired in the rural areas, where poverty and starvation, as a result of food insecurity, are known to prevail and have resulted in social unrest for many decades, especially the past two. It has therefore, been the concern of most developing nations to ensure that there is food security in all parts of their countries. The Food and Agriculture Organization (1999) has established the fact that food security is an important issue in the debate of rural development and poverty alleviation policies in many developing countries, and that 790 million people and 34 million people in developing and developed countries, respectively, have inadequate amounts of food to eat. They are, therefore, suffering from chronic food insecurity.

The situation explained above has constituted a serious problem that needs to be considered. In Nigeria, like most other sister nations, agricultural extension services have a very great role to play towards ensuring that there is food security in the country. However, observation has shown that there is still a considerable level of food insecurity in the rural areas of the nation. It has, therefore, become imperative for agricultural extension experts and rural development advocates to know what extension workers have done, and are still doing to promote food security in the nation. This study was, therefore, designed to answer some questions regarding the role of the agricultural extension service in promoting food security in the study area. There is still a knowledge gap regarding the services rendered by extension workers in the study area, taking into cognizance the availability of improved communication means by which innovative practices can be made known and accessible to the rural farmers. Thus, the following research questions were therefore asked and are answered at the end of the study.

Research Questions

- i. What are the socio-economic characteristics of the respondents?
- ii. What is the food security status of the respondents?
- iii. What is the relationship between the socio-economic characteristics of the respondents and food security?
- iv. What are the problems causing food security among

the respondents?

Objectives of the Study

The main objective of the study was to investigate the socio-economic characteristics of the respondents affecting food security among rural people in Yola-North L. G. A. of Adamawa State, Nigeria. The specific objectives were to:

- i. identify the socio-economic characteristics of the respondents;
- ii. identify the food security status of the respondents;
- iii. determine the relationship between the socio-economic characteristics and food security status of the respondent's; and,
- iv. identify the problems causing food insecurity in the study area?

Scope of the Study

The study focused on the agricultural extension services delivered only by agricultural extension workers of the Adamawa State Agricultural Development Programme in the study area. The study also considered the food security status of the responding household heads from January to December 2017.

Significance of the Study

The findings of this study will be of great importance to extension workers, as it would help identify the types of services delivered and those yet to be delivered, which are capable of promoting food security. The findings reported in this study can also be used by future researchers who are interested in food security issues by enabling an understanding of the limitations and the areas that require further attention. Teachers, students and the general public who might wish to conduct similar or related studies will find this study helpful in terms of how new studies can be designed. It will also go a long way in helping the Ministry of Agriculture to plan better service delivery strategies, thus, proffering lasting solutions.

Methodology

Area of Study

The study was conducted in Yola-North Local Government Area of Adamawa State. Yola-North, also known as Jimeta, has a population of 336, 648 as at 2010. The major ethnic groups in the area are the Fulfulde and Vere. Jimeta lies along the River Benue. From mid-July to mid-October when the river has deep waters, boats are used to carry groundnuts and cotton from Cameroun. On the other hand, hides and skin are transported from the land of Jimeta downstream through

the River Niger and Delta ports for export. The local trades on sorghum, millet, yams, onions, pepper, cattle, sheep, goats and poultry. Jimeta consists of lakes such as Geriyo, and Falai and a hill called Bagale hill. The area has a total of 831km². It has an average rainfall of 168mm with an average temperature of 27⁰C. Being the state capital, it is a major transport hub.

Sampling Procedures and Sample Size

The multi-stage random sampling technique was used for the study. In the first stage, six wards out of the existing eleven were selected at random. In the second stage, villages were randomly and proportionately selected. This means that same percentage (30%) of villages was selected from each ward so that a larger number of villages were selected from the ward containing a larger number of villages, while a smaller number was selected from the wards with smaller numbers of villages. Similarly, in the third stage, only 30% of each of the lists of registered rural people's associations were obtained and randomly selected. This was done to ensure that each of the villages was properly represented. Thus, the total number of 105 respondents were sampled and used for this study.

Data collection

The data analyzed in the study were generated from primary sources. However, some of the information used was accessed from secondary sources, particularly from farm records obtained from the respondents and their leaders. The primary data were elicited from the respondents through the use of a validated and well-structured questionnaire which was administered using interview schedule anchored by trained agricultural extension workers of the Adamawa Agricultural Development Programme.

Data Analysis

Both descriptive and inferential statistics were used to analyse data collected. Descriptive statistics (frequencies, percentages and mean) were employed to address objectives i, ii and iv, while the inferential statistic (Logit regression) was employed to analyse objective iii.

The Logit regression model was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + U$$

Where:

Y= availability and access to quality food throughout the year
(Yes =1, No = 0)

X₁ = age (number of years of the respondent)

X₂ = sex (male =1, female = 0)

X₃ = marital status (married =1, others = 0)

X₄ = farm size (area in hectares)

X₅ = level of educational (years spent in school)

Table 1: Distribution of respondents based on socio-economic characteristics.

Variables	Frequency	Percentage	Mean
Sex			
Male	62	59	
Female	43	41	
Age			42.3
18-30	28	27	
31-40	40	38	
41-50	18	17	
51-60			
Marital Status	15	14	
Single	24	23	
Married	66	63	
Divorced	3	03	
Widow		08	
Household Size	8		4.6
1-5	61	58	
6-10	29	28	
11-15	12	11	
16-20	2	02	
Above 20	1	1	
Level of Education			
Primary	09	09	
Secondary	29	28	
OND	17	16	
NCE	17	16	
HND	16	15	
B. Sc.	15	14	
Others	02	02	
Income			218, 000
50,000-100,000	39	37	
101, 000-200,000	31	29	
201,000-300,000	12	11	
301,000-400,000	14	13	
Above 400,000	09	09	
Farm Size			1.4
1	56	53	
2	40	38	
3	06	06	
4	03	03	
Farming Experience			6.7
1-5	44	42	
6-10	51	49	
11-15	08	08	
16-20	02	02	

Source: Field Survey, 2018.

X_6 = income (amount in naira)
 X_7 = farming experience (years)
 X_8 = household size (number of people in a house)
 X_n = explanatory variables
 β_0 = Constant term
 β_1 - β_7 = Regression coefficients
 U = error term.

RESULTS AND DISCUSSION

Socio-economic Characteristics

The socio-economic characteristics of the respondents

considered in the study are presented in Table 1. The results show that 59% of the respondents are males, while 41% are females. This shows that the majority of the people that were involved in the study are men. The reason why the men were more than the women could be attributed to the fact that, under normal circumstances in Africa, men are responsible for the provision of food for their household members, unless the death of the husband occurs, and the household head is a widow. The results in the table show that 38% of the respondents fall in the age range of 31-40 years, with a mean age of 42.3 years. This mean shows that most of the respondents are in their agriculturally active and

Table 2: Distribution of the respondents based on adoption of technologies.

Technology	*Frequency	Percentage
Use of improved seed variety	43	41
Method of fertilizer application	30	29
Use of modern farm machineries	34	32
Plant spacing	16	15
Timely planting	31	30
Use of innovative storage methods	16	15
Pests and disease control	36	34
Animal management	13	12
Use of line fishing	04	04
Angling method of fishing	02	02
Use of power tools	04	04
Use of electric sowing machine	05	05

Source: Field Survey, 2018. *Multiple responses were observed.

productive ages. The table also depicts the marital status of the respondents, which shows that the majority (63%) of the respondents are married. The reason for this could be attributed to the fact that married people are, in most cases, under normal circumstances, concerned with the feeding and well-being of their families. In this regard, the majority of them are conscious of the needs of their family members and are therefore, involved in farming. The table also gives information on household size. The results show that there is a mean of 4.6 people per household, which could be regarded as a moderate size. Those with large family sizes, by implication, have a greater number of adult household members who can participate in agricultural production activities than those with smaller numbers, since more food is needed in households of larger size than in smaller ones, to be food secure.

Presented in the table also is the distribution of the respondents based on their levels of education. Most of them went through formal education, with those having a secondary school education constituting the highest percentage (28%). However, when the other higher levels of education are put together, the majority (72%) of them has attained postsecondary school levels. This could facilitate the adoption of improved agricultural technologies and hence, increase the probability of a majority of the respondents attaining food security. This assertion agrees with the position of Ani (1998) who pointed out that, farmers' education generally has been found to enhance the production among food crop farmers, apparently resulting from their efficiency in using new technologies.

The income distribution of the respondents shows that the respondents earn a mean annual income of 218,000.00 naira. It can be deduced from the results that their annual income, which gives an average of 18,000 naira per month, is very low considering the fact that many other household needs to be met from this same

amount, including the reserves for the coming year. This suggests that it is difficult for them to be food secure and, thus, may prove an impediment to adopting agricultural technologies that need money, taking into cognizance the fact that the annual income of farmers determines their ability to purchase farm inputs and settle farm labour where required. This position is supported by the report released by the Food and Agriculture Organization (2000). Distribution of respondents based on farm size reveals that the respondents have a mean farm area of 1.4 hectares of land under cultivation. From the distribution, it could be deduced that most of them are small-scale farmers. The distribution of the respondents in terms of farming experience shows a mean of 6.7 years of farming experience. This implies that there are young farmers among the respondents who have not yet spent many years in farming.

Adoption of Agricultural Technologies

The agricultural technologies studied are presented in Table 2. The results indicate that out of the twelve agricultural technologies studied, only the use of improved seed varieties that was completely adopted as revealed by 41% of the respondents. This could be as a result of the purported non-availability of or difficulty in accessing the desired quantity of improved seed varieties, high cost of same, and a total lack of awareness on the sources from where the improved seeds could be obtained. Similar reasons were given for not using modern farm machinery. Only 32% of the respondents adopted mechanized farming. This could be due to the fact that the hiring of tractors and other farm machines is expensive and hence, not affordable for the majority of the respondents. Therefore, they have no other option than to resort to their traditional practices. This was supported by Onyewaku (1988) who reported that farmers stick to old practices as a result of economic

Table 3: Results of logit regression analysis.

Variable	Coefficient	Z	P> Z
Sex	-.0538	-0.11	0.910
Age	-.6236	-1.64	0.101
Marital status	.1230	0.34	0.731
Household size	.5222	1.34	0.182
Farm size	.7511	3.08	0.037
Level of education	.8290	0.54	0.049
Income	.7351	3.23	0.001
Farming experience	.6890	2.07	0.039

Source: Field Survey, 2018.

inability to bear the cost of some innovations, the risks involved, ignorance of existing innovation(s) and the respondents' conservative attitudes towards change in general.

The result of fertilizer application also shows that only 29% of the respondents adopted the recommended methods of application and quantities of fertilizer. This indicates that there was a low adoption of the technology, probably because most of the respondents were using side placement because of the ease with which it can be applied as against incorporation of the fertilizer into the soil, which consumes relatively longer time. The perception that led to the decision not to incorporate fertilizer into the soil might not be unconnected with the possibility that the latter is difficult and time intensive than the former as judged by the respondents. Timely planting was adopted by only 30% of the respondents, while the majority mentioned early pest attack and drought as their reasons for not adopting timely planting. For the recommended spacing of crops, the respondents argued that when plants are grown close together, there is a high density and congestion. This opinion could mean that the respondents that made this claim have not had the opportunity to be told or shown by extension workers, the importance of recommended crop spacing which ensures maximum plant population and, subsequently, maximum yield.

Only 15% of the respondents adopted innovative storage methods. This low adoption rate shows that there is a poor awareness of the technology regarding storage practices. There were other factors also that have affected the adoption of the technologies as opined by some of the respondents. Some of these factors are lack of government support, lack of motivation of the front line extension workers, lack of access to credit facilities and lack of inputs or their untimely supply.

Logit Regression Analysis on Socio-Economic Characteristics of Respondents and Food Security Status

The results in Table 3 show the socioeconomic determinants of food security of the respondents. The results show that the level of education (X_5) has a

coefficient of 0.8290, income (X_6) has a coefficient of 0.7351, household size (X_8) has a coefficient of 0.5222, and all the three were found to have positive and significant relationships with food security at 5% level of significance. Farming experience (X_7) also has a coefficient of 0.6890 and has a positive and significant relationship with food security at 5% level of significance. This implies that for every unit increase in the level of education, income, farming experience and household size of the respondents, there is a corresponding likelihood of the household being food secure. In other words, this implies that for any unit increase in their level of education, income, farming experience or household size, there is also the likelihood that quality food will be available and accessible to the household throughout the year considered in this study. This could be attributed to the fact that the farmers who have high income are, among other reasons, capable of adopting agricultural technologies that can improve both the quantity and quality of their food production. They also have the opportunity to acquire some of the required farm inputs to boost their crop yields. This will, therefore, ensure that the household is food secured. The findings of some earlier studies support the findings in this study. For instance, the findings of studies conducted by Quaye (2008) and Maxwell (2003) indicated that educational level was found to have a positive and significant relationship with food security at 1% level of significance, and in this study, there is also a significant relationship between the level of education and food security. In other words, only a few years of farming experience, low level of education and low income will imply low food production, non-availability, non-access and, which in turn, will mean that there will be food insecurity in such households. Age was also found to have a negative, but significant relationship with food security at 10% level of significance. It is quite a weak relationship. However, this means that for every unit increase in age, it is likely that the respondent will be food insecure. Which means as the respondent becomes older, his household will find it difficult or is unlikely to get and access food in the household throughout the whole period of twelve months. All the rest of the other socioeconomic characteristics studied being age (X_1), sex (X_2), marital status (X_3) and

Table 4: Distribution of the respondents based on problems causing food insecurity.

Problems Causing Food Insecurity	*Frequency	Percentage
Expensive technology	53	51
Lack of extension contact	30	29
High cost of labour	36	34
Inadequate capital	47	45
High cost of seeds	25	24
Pest and disease infestation	30	29
Inadequate rainfall	21	20
Lack of fertile land	11	11
Inadequate power supply	08	08
Poor record keeping	20	19
Lack of transport system	15	14
Government policy and law	12	12
High cost of living	23	22
Lack of storage facilities	09	09

Source: Field Survey 2018. *Multiple responses were observed.

farm size were found to be not significant. Therefore, for any unit change in any of them, there will be no substantial effect on food security or food insecurity of the respondents. This result is supported by the findings of an earlier work carried out by Babatunde et al. (2007) in which they reported that increase in farm size also leads to increase in crop output, thereby reducing vulnerability to food insecurity. The results of Mango et al. (2014) disagree with the findings of this work. They reported that age has a significant relationship with food security. They also reported that the level of education has a significant relationship with food security. However, some of these results are supported by the findings of an earlier study conducted by Mallick and Rafi (2010) who also reported that there is no significant relationship between food security and sex. Similarly, the study conducted by Ahmed et al. (2014) on socioeconomic characteristics analysis of semi-urban households in Bama Local Government Area of Borno State also revealed that the coefficient of household income was found to have a positive and significant relationship with household food security at 1% level of significance. Furthermore, the results of the study conducted by Oluyole et al. (2009) showed that there was a positive and significant relationship between farmers' farming experience and food security at 5% level of significance, which also agrees with the results of this study.

Problems Causing Food Insecurity among the Respondents

Table 4 depicts the constraints identified in the study. The results show that 51% of the respondents identified the high cost of technologies as the major problem responsible for their inability to attain food security. The other significant problems identified are inadequate rainfall, high cost of labour, pests and diseases and the

lack of frequent contact with extension workers. Although the problem of low rainfall may be absolutely out of the control of extension workers, pests and diseases can be controlled. The extension workers can also increase the frequency of their visits to farmers to give all needed assistance in their time of need. The problem of expensive production technologies could be worsened as a result of inadequate capital, which was indicated by 45% of the respondents. With enough capital, even the problem of pests and disease infestation, which was indicated by 29% of the respondents can be minimized if extension workers are conversant with the times of infestation and give appropriate advice well ahead of time before the occurrence of the incident.

Conclusion and Recommendations

The socioeconomic characteristics of the respondents have played a major role in ensuring whether they are food secured or food insecure. The respondents depend mainly on crop production, and more than half of them are food secure. There is a need for extension workers to intensify effective extension service delivery. The expected level of capacity building of both extension workers and the rural people was found to be either minimal or entirely lacking depending on the village or villages in question. The frequency of contacts between extension workers and the rural people is inadequate, and this is considered as one of the reasons why close to half of the respondents are food insecure. Late delivery of extension advice and in some cases the unavailability or difficulty in accessing them have been partly responsible for food insecurity in some of the households. The major recommendations are:

i. Agricultural production technology packages for crop production among rural farmers should be introduced at

an affordable price.

ii. The government should provide loans to small-scale farmers without any collateral or with feasible collateral requirements.

iii. Insurance cover should be made mandatory for farmers. This will reduce their suffering and can assist them greatly in the event of total crop loss.

iv. Extension workers should encourage and persuade farmers to group themselves into cooperatives, to enable them to obtain various assistance from government and NGOs.

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