IMPACT OF BANK OF AGRICULTURE LIMITED (BOA) ON FOOD SECURITY STATUS OF SMALL –SCALE FARM   HOUSEHOLD IN SOUTHWESTERN NIGERIA

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ABSTRACT

In Nigeria, it has been documented that small scale farmers devote most of their resources to food production at the detriment of food security status of their households. There is, however a dearth of information about the consequence of these practices on the food security of small scale farm households. In this study, the food security status of the Bank of Agriculture customers, both loan beneficiaries and non-loan beneficiaries, in Ondo and Osun States , Nigeria are examined. Multistage sampling technique was used to select 180 respondents households from the study area. Information was collected from the respondents with the aid of structured questionnaire and data obtained   were analyzed using descriptive statistics, food security index, surplus /short fall index and probit model. The food security line was N2,296.20 per month per adult equivalent. Based on this, 64% of the total sampled households were food secure while 36% were food insecure. Food secure household exceeded the calories requirement by 12% while food insecure household fell short of calories requirement by 9%. The major constraint to Bank of Agriculture performance included: under funding of the bank by the federal Government, changes in government policies in finance of agriculture, frequent changes in the identity of the bank, increase in interest rate and closure of branches, organizational factors, lack of tools and mandatory 20% deposit by the farmers . It was also discovered that endogenous factors, such as inappropriate policies, misplaced priorities and neglect of Agriculture as well as poor implementation by the government are responsible for current Nigerian food security status. A high percentage of household was food secure, hence, the impact of the bank is said to be positive and households in the study area could be said to be food secure.

KEYWORDS: Food Security, Probit, BOA, Small – Scale, Household

INTRODUCTION

Nigeria was acknowledged as a leading producer and exporter of many tropical Agricultural products. Indeed, the country was largely self-sufficient in basic food items .However, Over the last several decades, increasing attention has been drawn to the deteriorating food situation in Nigeria. The food self sufficiency ratio has fallen from 98% in early 1960s to less than 54% in 1986. In 1990, 18% of the population (14.4 million) was estimated to be critically food insecure and this has increased to 36% (32.7 million) in 1992 and further increased to 40.7% in 1996. Presently, over 40% of Nigeria's estimated population of 150 million people is food insecure (Idachaba,2004).

Food security is defined as access to sufficient and affordable food which can relate to a single household or to the global population (FAO, 2008). Food crisis reflects a breakdown in global food system that threaten the worsen poverty, hunger, climate and insecurity. It embodies access at all times to enough food for an active health life (World Bank, 1986; FAO, 1989). Food security exists when "all people at all times have access to safe nutritious food to maintain a healthy and active life" (FAO, 1996). The main goal of food security is for individuals to be able to obtain adequate food needed at all times, and to be able to utilise the food to meet the body's needs. Food security is multifaceted. The World Bank (2001)

identified three pillars underpinning food security; these are food availability, food accessibility, and food utilization. This infers from concept that food security is not just a production issue.

Food availability for the farm household means ensuring sufficient food is available for them through own production. However, due to lack of adequate storage facilities and pressing needs, they mostly end up selling excess produce during the harvesting period, and sometimes rely on market purchases during the hungry season. Food access means reducing poverty. Simply making food available is not enough; one must also be able to purchase it, especially the low-income households (Sen 1981). Pervasive poverty among the rural population in Nigeria is an indication of low agricultural productivity and relatively low incomes (Abdullahi, 1999). D'Silva and Bysouth (1992) defined absolute poverty as lack of access to resources required for obtaining the minimum necessities essential for the maintenance of physical efficiency. This connotes that the poor farmers will have little access to food, either produced or purchased. Farm families with limited access to productive resources such as land, inputs and capital, required for attaining physical efficiency in food production could be food insecure i.e. resource poverty could lead to low productivity, food insufficiency, and lack of income to purchase the needed calories.

Food utilization means ensuring a good nutritional outcome, which is nutrition security. Having sufficient food will not ensure a good nutritional outcome if poor health results in frequent sickness. Building this pillar means investing in complementary resources such as nutrition education, health care, provision of safe water and better sanitation, instituting gender symmetry, and removal of child abuse practices (Doppler, 2002).

The challenges of food security can be at national, regional, local or household levels. At the national level for example, a nation is food secure when the majority of the population have access to food of adequate quantity and quality consistent with decent existence at all times. At the household level, food security exists when all members of the family have access to food of adequate quantity and quality consistent with decent existence at all times.

Availability of food is a function of food production, stock holding and food marketing (Von Braun *et al,* 1992). Certainly by raising agricultural productivity, (i.e increase the land area planted and increase yield per hectare), food availability could be increased. However, availability is not enough. The food produced must be distributed efficiently at minimum costs in-order to guarantee continuous availability of the food (Doppler, 2002).

The financial system is a critical component of any economy as it plays a crucial role in the process of financial intermediation for economic growth and development. . In this regard, the need of agricultural sector financing becomes imperative if agricultural development and food security is to be achieved. The Nigerian agricultural sector (and important source of income, employment, raw materials, foreign exchange and market) is dominated by peasant farmers who operate under small scale system with meager capital outlay; hence it is stagnate, growth. This therefore, calls for an intervention by financial institution to resuscitate the dwindling agricultural sector. (Polycarp *et al.,* 2000). However, in spite of the Establishment of Bank of Agriculture, its impact in relation to Agricultural financing is minimally felt.   Furthermore, to effect the development of the rural economy, Ajakaiye (1990) stressed that "the vicious cycle of low level of output, low income, low savings and investment which characterized the rural areas must first be broken through massive injection of credit assistance from both within and outside the rural sector".Njoku and Odii(1991) were of the opinion that: "adequate supply and use of credit by the rural people are essential for improving their level of productivity and income"

For credit markets to perform their role and functions effectively especially in solving rural sector problems, there is the need to have an efficient credit delivery system that could get credit to the greatest number of the rural populace quickly and cheaply. However, because of the inadequate or imperfect information on the workings of the rural credit

market in Nigeria as a whole and Ondo and Osun States in particular there is need for this study in order to provide empirical and reliable data that will generate the needed information for formulating appropriate policies and programmes designed to improve the funding,operation, structure,organization and performance of the bank.

METHODOLOGY

Data for the study were collected with the use of two set of structured questionnaire one for the loan beneficiaries while the other was for the credit institution. Personal observation was also made by the interviewers.The sampling technique employed in this study is multi-stage sampling, involving 4 stages. At the first stage, two states were randomly selected out of the 6 states in southwestern Nigeria. At the second stage, purposive sampling method was used to select three (3) Bank Branches in each state because of the different project financed by these agricultural banks. At the third stage, a list of 80 customers was purposively obtained from the selected bank branches of each state. Finally from this list, 30 customers were randomly selected making a total of 180 respondents. Data generated from this study were analysed using descriptive statistics and econometric techniques.

Food Security Index

The function is stated as

In $X = a + bC$ ……………   (i)

Where

X = food expenditure (₦)

C = calorie consumption (kcal)

From the COC function, Z was calculated

Hence,

$Z = e^{(a+bL)}$……………………………   (ii)

Where

Z = cost of minimum recommended energy level (₦);

L = recommended daily energy level (kcal);

a = intercept;

b = coefficient of the calorie consumption

Any household whose average cost of daily calorie consumption is equal to or more than Z is said to be food secure while any household with average cost of daily calorie consumption of less than Z is said to be food insecure.

Surplus / Shortfall Index

The tool was used to measure the extent to which a household is food secure or insecure. The index is given as

$P = 1/_N \sum_{Gj}$ $j=I$ …………………………   (iii)

$Gj = (xj – L)/L$ ………………….....   (iv)

Where

P =   surplus /shortfall index:

L =   Recommended daily per capital requirements (2450 kcal.);

Gj =   Calorie deficiency faced by household;

Xj =   per capital food consumption available to household;

N =   Number of household that are food secure for surplus index or food insecure (for shortfall index)

In implementing food security policies and programmes, the value of the index could be monitored over time and compared between loan beneficiaries and non beneficiaries.

Probit Model

Probit model was used to identify the factors influencing the achievement of food security among the respondents. Probit model could be represented as

$$Y = \sum aX + ei \dots\dots\dots\dots\dots\dots\dots \quad (v)$$

Y = vector of dependent variable (1 for food secure household; 0 for food insecure household);

X = vector of explanatory variables (predictors);

a = probit coefficients;

ei = random error term

The explanatory variables included in the model are:

X_1 = Sex (male -1: 0, female),

X_2 = Age of household (years)

X_3 = Faming experience (years)

X_4 = Household size (number)

X_5 = Cooperative membership (1, if belong to an association, 0 if other wise)

X_6 = Farm size (hectares)

X_7 = Annual income (₦)

X_8 = loan accessibility

ei = The disturbance (error) term

RESULTS AND DISCUSSIONS

The main objective of this study is to evaluate the impact of Bank of Agriculture (BOA) on household food security in Ondo and Osun states, Nigeria with a view to identifying food security status of both loan beneficiary and non loan beneficiary households. In addition, the study determined the Socio-economic characteristics of loan beneficiaries, and non-loan beneficiaries as well as accessibility of small-scale farmers to credit facilities while constraints to effective and timely loan procurements were identified. Most respondents were relatively young, literate and with moderate large

family size. Majority of them were full time farmers, traders and with secondary occupation, relatively low annual households income and sought loans essentially to finance household production and consumption needs.

The major determinants of the household food security status were: age, household, sex, membership of cooperative society, annual income, family size and accessibility to loan.

Probit Model Result on the Determinant of Food Security Status in the Overall Status

Variable	coefficient	t value	Marginal effect
Constant	0.0429	1.8532	0.6721
Sex -	-0.569	-0.9532	-0.0831
Age	-0.6953	-3.293***	-0.6346
Years of education	0.1401	1.804*	1.1153
Household size	-0.3904	4.0521***	-0.4454
Cooperative membership	-0.4483	0.569	-0.6126
Farm size	0.7677	2.2432**	0.7189
Annual income	0.7246	0.538	0.0947
Accessibility to credit	0.0041	1.7845*	0.0092

Source: field survey, 2011 ** Significant at 5%

Household Size

Household size in the study refers to the number of people that feed from the same pot. Following from Table 2, 58.4% of loan beneficiaries and 87.3 of non loan beneficiaries   were between 6-10 person per household while the average number of person per household was 8. This generally indicates that as household size is increasing, the percentage of food secure household keeps on decreasing. Hence, the size of household determines food security status of the household. This result is in agreement with Babatunde et al., (2007), which found that as the household size increase, the probability of food security decreases. This could mean that as the household size increases, there is larger number of people to be taken care of by the same source of income.

Table 2: Distribution of Respondents by Household Size

Household	Loan beneficiary	Non loan beneficiary
0-5	37 (29.6)	2 (3.6)
6-10	73 (58.4)	48 (87.3)
11-15	15(12.0)	5 (9.1)
Total	**125 (100)**	**55 (100)**

Source : Field survey, 2011. (Figures in parentheses are percentages)

Size of Loan Applied for

Table 3 shows that the highest percentage of loan beneficiaries of 33.6% applied for loan of between ₦151,000 and 200,000 from the Bank while the lowest percentage of 7.2% applied for ₦ 201,000-250,000. This analysis show that the amount of loan applied for indicates the beneficiary interest to adopt new technologies to be food secure. This is line with Olagunju et al, (2002). However, if these entire amounts are granted to meet the respondents demand and are efficiently used, agricultural productivity will increased and, hence, has a positive impact on their income status and enable them to be more food secure.

Table 3: Distribution of Respondents by Size of Loan Applied For

Size of Loan Applied for	Loan Beneficiary	Non Loan Beneficiary
20,000 – 50,000	15 (12.0)	0 (0)
51,000 – 100,000	25 (20)	0 (0)
101,000 – 150,000	23 (18.4)	0 (0)
151,000 – 200,000	42 (33.6)	0 (0)
201,000 – 250, 000	9 (7.2)	0 (0)
251,000 and above	11 (8.8)	0 (0)
Total	**125 (100)**	**55 (00)**

Source: Field Survey, 2011 (Figures in parentheses are percentage)

Size of Loan Receives

Table 4 shows that the highest percentage of 35.20% obtained loan of between ₦101,000 and ₦150,000 while the lowest percentage was 1.6%. As a specialized financial institution, Bank of Agriculture is to inject much needed funds into the agricultural sector.

This indicates that the higher the level of loan secured, the more food secure a household. This is in line with Olagunju et al (2002) for agricultural loan to be productively utilized, credit institutions are expected to grant loan to farmers to the amount that will be adequate enough to meet farmers need. Loans which exceed the farmers' capacity for repayment might put the farmer into debt while insufficient credit does not allow farmers to enjoy improved practice to take a rational use of his resources. Hence the higher the loan volume granted the more food secure a household.

Table 4: Distribution of Respondents by Size of Loan Receives

Size of loan in Naira	Loan beneficiary	Non loan beneficiary
20,000 – 50,000	17 (13.6)	0 (0)
51,000 – 100,000	40 (32.0)	0 (0)
101,000 – 150,000	44 (35.20)	0 (0)
151,000 – 200,000	13 (10.4)	0 (0)
201,000 – 250, 000	9 (7.2)	0 (0)
251,000 and above	2 (1.6)	0 (0)
Total	**125 (100)**	**55 (00)**

Source: Field survey, 2011. (Figures in parentheses are percentages)

Annual Income of the Respondents

Table 5 shows that the higher percentage of 39.2% of loan beneficiaries and 21.8% non loan beneficiaries realized total annual income of ₦501,000 and above and the income group constituted 4.8% of loan beneficiaries and 10.9% of non loan beneficiaries.

This indicates that as the Annual incomes of the household increases, the percentage of households that are food secure also increases.

This finding is in line with Babatunde et al., (2007), who found that the higher the household income, the higher the probability that households would be food secure. This could be expected because increased income, other things being equal leads to increased access to food.

Table 5: Distribution of Respondents by their Level of Income

Level of Annual Income in Naira	Loan beneficiary	Non loan beneficiary
≤ 150,000	6 (4.8)	6 (10.9)
161,000 – 200,000	17 (13.6)	O (0)
201,000 – 300,000	22 (17.6)	37 (67.3)
301,000 – 400,000	21 (16.8)	O (0)
401,000 – 500,000	10 (8.0)	0 (0)
501,000 and above	49 (39.2)	12 (21.8)
Total	**125(100)**	**55 (100)**

Source: Field survey, 2011(Figures in parentheses are percentage)

Amount Spent on Food Items Per Month

Table 6 shows that the highest percentage of loan beneficiaries 31.2% and 40% non loan beneficiaries spent between ₦5100 and 10,000 on food items per month and lowest between 0.8% loan beneficiaries and 10.9 non loan beneficiaries. This indicates that the household size affects the food security status of the household and this determined amount to be spent on food items per month. The larger the size, the lower the available food to each person within the household and consequently the nutritional status is affected. This is in line with Olagunju et al, (2002). Large family size also reduces the per capita expenditure of the family, thereby deepening the level of poverty in such household. The larger the family size, the lower the probability of food security of household.

Table 6: Distribution of Respondents According to the Amount Spent on Food Items Per Month

Amount Spent Per Month	Loan beneficiary	Non loan beneficiary
0 – 5000	29 (23.20)	15 (27.3)
5100 – 10,000	48 (31.2)	22 (40)
10100 – 20,000	22 (17.6)	12 (21.8)
20,100 – 40,000	30 (24.0)	12 (21.8)
40,100 – 60,000	1 (0.8)	6 (10.9)
Total	**125 (100)**	**55 (100)**

Source: Field Survey, 2011(Figures in parentheses are percentages)

Loan procurement, Size and Disbursement Problems

Table 7 shows the critical factors affecting the participants with respect to the loan procurement, time of disbursement and loan size. A very high proportion of the credit participants (59.55) indicates that late loan disbursement militate against their loan procurement as well as the smallness in size or volume of their loans.

The small size of loan procured revealed from this study tallies with that of Udry (1990) who observed from the study of the credit market in northern Nigeria that, the average amount or credit transacted per household over the survey year 1989-1990 was approximately ₦1000. Late disbursements of loan were other associated problems.

Table 7: Loan Procurement, Size and Disbursement Problems

Nature of the Problem	Loan beneficiary
Small size of loan	32.27
Late disbursement	27.28
Interest rate	25.45
Moratorium	15
Total	**100**

Source: Field survey, 2011

The constraints to effective bank performance and credit accessibility were also identified: as small size of loan, late disbursement, interest rate moratorium and lack of loanable fund. Percentage household food security status shows that 36% of loan beneficiaries were food insecure and 54% of non-loan beneficiary were food insecure and 64% of loan beneficiaries were food secure while 46% of non-loan beneficiaries were secured too.

Nature/Depth of Food Security among the Respondents

The statistics of food security measure are presented in Table 15 based on the recommended daily energy level (L) of 2450 kilocalories (FAO, 2007), The food security line for the household was estimated at ₦76.54 per day per adult equivalent (2,296.20) per month per adult equivalent). On an annual basis this is equivalent to   #27,248.24 per year per adult equivalent. Result of the analysis showed that 64% of loan beneficiaries and 46% of non Loan Beneficiaries were able to meet the recommended calorie intake of 2450 Kilocalories per capita per day, About 46% of non loan beneficiary and 36% of loan beneficiary were   food insecure subsisting on less than the recommended daily per capital caloric regiment of 2450 kilo caloric. The surplus index (P) shows that the food secure household exceeded the caloric requirement by 12 percent for loan beneficiary and 11 percent for non-loan beneficiary. While the shortfall index show that the insecure household fell short of the recommended for loan beneficiaries 20% and non loan beneficiaries calorie intake by 23 percent.

Summary Statistic and Food Security Indices for the Overall Status

Variables	Value
Cost-of –calories equation	In x=a+bc
Constant	3.624
Slope coefficient	0.005112
Recommended daily energy levels	2450Kcal.
Food security line Z: cost of minimum energy requirements per	
Adult equivalent	₦76.54 per day
	₦ 2,296.20 per month
	₦ 27,248.24 per Year
Head count ratio (H): For Loan Beneficiaries	0.36(for food insecure households)
	0.64 (for food secure households)
Head count ratio (H): For Non Loan Beneficiaries	0.54(for food insecure households)
	0.46 (for food secure households)
Surplus Index	0.12
Shortfall index	0.09
Percentage households:	36% food insecure household (Loan Beneficiaries)
	54% food insecure household (Non Loan Beneficiaries

Source: computed from field survey data, 2011(Figures in parenthesis are in percentages)

CONCLUSIONS

Based on the empirical evidence emanating from this study, the following conclusion can be drawn: Household food security decreases with increasing household size, household food security increases with increasing household monthly income. Household food security increase with increase in the volume of loan and food security analysis shows that 64 percent of the sampled households in the study area were food secure while 36percent of household in the study area were food insecure. Hence, more loan beneficiary household in the study area were food secure than non- loan beneficiary households.

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