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Research Article

ANCHOR BORROWER'S PROGRAMME AND FOOD SECURITY STATUS OF RICE OUT-GROWERS IN KWARA STATE, NIGERIA

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ABSTRACT

Credit has been recognized as a powerful instrument for tackling the food security and poverty crisis. Thus, this study examined the effect of Anchor Borrower's Programme(ABP) on the food security status of rice out-growers beneficiaries and non-beneficiaries in Kwara State. Multistage sampling procedure was employed in the selection of 242 ABP beneficiaries and non-beneficiaries rice out-growers. Descriptive statistics, inferential statistics and United State Development Agency (USDA) approach of measuring food security were employed for this study. The results revealed the mean age of ABP beneficiaries and non-beneficiaries rice out-growers as 42 years and 51 years with covariance (CV) of 22.4% and 25.3% respectively. A mean household size of 7 and 10 with an average annual income of ₦564, 235 and ₦ 297,782 were further revealed by the study for both beneficiaries and non-beneficiaries respectively.

Income, farm size membership of cooperative, dependency ratio, age and household size were major drivers of food security among ABP rice out-grower in the study area. The scale further showed that the ABP beneficiaries were more food secured than the non-beneficiaries. The study concluded that ABP had impacted the food security status of the rice out-growers. ABP should be extended to more rice out-growers in the state with adequate and constant interventions on annual basis by all levels of government.

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INTRODUCTION

Food is vital to life. Its importance is seen in the fact that it's a basic means of sustenance and, a recommended food intake in terms of quantity and quality is critical for a healthy and productive life (Committee on World Food Security, CFS, 2012; FAO, 2005). Salau *et al*., 2019 noted that food expenses gulp a large portion of a typical Nigerian household budget. It is relevant to note that the need for food is of topmost priority in most households' needs. Thus, the attainment of food security is essential to countries around the globe. Food and nutrition security occurs when all people at all times physically, socially and economically access safe and sufficient quantity and quality of food to meet their dietary needs and preferences which is supported by an environment of adequate sanitation, health services and care, allowing for a healthy and active life (CFS, 2012).

Credit is recognized as a powerful instrument for tackling the food security and poverty crisis, thus the multitude of programmes aimed at providing credits to farmers in Nigeria had emerged (Oruonye and Musa 2012). In spite of the establishment of numerous credit programmes, the small scale farmers especially the local rice farmers still find it difficult to access adequate credit because of the expensive nature of the production resources (Ayinde *et al*., 2018). Inadequate access to markets, poor utilization of existing small-scale mills, outdated and wasteful processing technology have continued to be serious challenges of local rice production, consequently little or no value is added to the rice to make it appealing (Ayinde *et al*., 2018).

The Anchor Borrowers' Programme (ABP) an initiative of the Federal Government of Nigeria was established in some selected states through the Central Bank of Nigeria (CBN) with the mandate of creating a linkage between anchor companies involved and Small Holder Farmers, SHFs (out-growers)of the required essential agricultural commodities(Rice inclusive)and toincrease credit access to the sector, among others. The Program overall aim is to reduce the cost of farm operations, increase rice production and improve the farmers' standard of living (CBN, 2016).

Despite the overwhelming programmes and resources put in place to make adequate credit available to farmers, the food security crisis remains a serious issue. From 2017 to 2018, over 90 million individuals were food insecure in Nigeria (Olomola and Nwafor, 2018). Moreso, only a few studies including;

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Olanrewaju *et al*., 2020; Iliyasu & Lawal, 2020; Okeke *et al*., 2019; Coker *et al*., 2018; Ayinde *et al*., 2018 have been carried out on the anchor borrowers Programme in Nigeria and none of the studies considered the food security status of the SHFs. Thus, it is imperative to bridge the literature gaps by establishing the exact determinants of food security among the ABP rice out-growers.

MATERIALS AND METHODS

The study was conducted in Kwara state. The state has a latitude and longitude of 8º and 10º North and 3º and 6º East respectively with an area of 35,705 Sq kilometers. Based on the Nigeria Census of 2006, Kwara state population comprise of 2.3million people. The state shares a boundary with the Republic of Benin and an interstate boundaries with Niger state. It also shares boundaries with Oyo, Osun and Kogi states to the southwest, southeast and east respectively as shown in fig. 1.

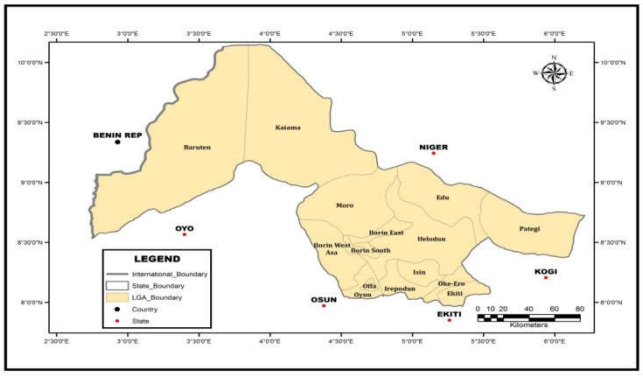


Fig 1 Map of Kwara state, Nigeria

Source: Adapted from Salau *et al*., 2019

Based on ecological characteristics, cultural practices and project's administrative convenience, the state is grouped into four zones by Kwara state Agricultural Development Project (KWADP). These are: Zone A: Baruteen and Kaima Local Government Areas (LGAs); Zone B: Edu and Patigi LGAs; Zone C: Asa, Ilorin East, Ilorin South, Ilorin West and Moro LGAs and Zone D: Ekiti, Ifelodun, Irepodun, Offa, Oyun, Isin and Oke-Ero LGAs (KWADPs, 2010).

Sampling Method

Primary data was used for this study. Data were gathered using interview scheduled. A four-stage sampling technique was used in the selection of respondents for this study. The first stage involved purposive selection of rice out-growers in Edu and Patigi LGAs of Kwara State. These LGAs accounts for majority of the rice produced in the state. The second stage involved random selection of 5 villages from each of the selected LGAs. The third stage involved random selection of 25Anchor borrowers' Programme beneficiaries and non-beneficiaries from each selected villages. In the last stage, the sample size of 250 was adopted using the Slovian formula with the assumption of 5 percent expected margin of error and 95 percent confidence interval. However, only 242 rice out-growers were adequately captured for the study.

The formula was given as:

$$n_0 = \frac{N}{1 + N(e^2)} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

n_0 is the sample size without bearing in mind the finite population correction factor; e= 0.05; N is the total number of observations.

Analytical Techniques

Descriptive and inferential statistical tool such as percentage and mean, Binary Logistic Regression and United State Development Agency (USDA) Food security approach were the analytical tools used for this study.

The socioeconomic attributes were explained using descriptive statistics.

The USDA approach categorized households using a constructed food security scale (0-10). The scale is expressed as shown in the table 1.

Table 1 USDA Approach, 2000 for Household Food Security Status

Scale	**0-2.32**	**2.33-4.56**	**4.57-6.53**	**6.54-10.0**
Food Security Status	Food Secured	Food Insecure		
		Food Insecure without Hunger	Food insecure with Hunger	
			Moderate	Severe

Source: Adapted and modified from Abdulazeez *et al*., 2018.

Binary logit regression was used to identify the drivers of food security among ABP beneficiaries and non-beneficiaries rice out-growers. The selection of variables on drivers of food security relies on previous studies of Salau *et al*., 2019; Ibok *et al.,* (2014) and Babatunde *et al*., (2007).

The regression model was estimated as follows:

$$Zi = b_0 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e_i \ldots\ldots\ldots\ldots (2)$$

Where Zi= the binary outcome of the food security status. It takes the value of one if food secure 0 if otherwise,

bo= Constant
$b_1, b_2 \ldots b_8$ = ith coefficient corresponding to $X_1, X_2 \ldots X_8$
e = error term

The independent variables are:
X_1 = Sex (D=1 for male; D=0 for female)
X_2 = Age (years)
X_3 = Household size (number)
X_4 = Educational status (years)
X_5 = Farming experience (years)
X_6 = Farm size (ha)
X_7= Dependency (number)
X_8= Membership of cooperatives(D=1 for yes; D=0 for no)
X_9 = Annual Income (Naira)

RESULTS AND DISCUSSION

The result in Table 2 shows the average age of ABP beneficiaries' rice out-growers as 42 while that of non-beneficiaries was 51 with a covariance of 22.4% and 25.3% respectively. This implies that ABP beneficiaries' rice-growers are still productive and could still cope with the demand for

rice production while non-beneficiaries could only cope partially with the high demand for rice production. The covariance(CV) indicates that there is low level of variation among age of both ABP beneficiaries and non-beneficiaries which implies that the result is precise. This finding is in line with Oladimeji and Abdulsalam (2013) who reported the average age of rice farmers in Kwara State to be 42 years. Large percentage (71.2% and 59.4%) of the out-growers were male.This finding is in line with Salau *et al*., 2019 who opined that cultural and religious belief of the people in Kwara State paved way for more access to farmland when compared with the female respondents. Majority of the out-growers were married. According to Ayinde *et al*., 2017, married farmers have extra responsibilities which can only be met majorly by their farm income unlike single farmers.

Majority of the ABP beneficiaries had an average of 13 years of education while non-beneficiaries had 6 years of education. This concurs with Ayinde *et al*., 2018 who reported that educational level has significant effect on rice farming.

The average household size of ABP beneficiaries' rice out-growers and non-beneficiaries was revealed as 7 and 10 persons, with a CV of 19.2% and 27.7% respectively. This implies that both ABP beneficiaries and non-beneficiaries has a large member, invariably, larger quantity of food is required by the households. The result further revealed the mean years of experience as 9 years with an average farm size cultivated by ABP beneficiaries and non-beneficiaries' rice out-growers as 1.74ha and 1.31ha respectively. Extension contact is germane for farmer's efficiency and increased productivity.The finding revealed that that ABP beneficiaries had contact with the extension agents at an average of 11 times while the non-beneficiaries expressed less extension agents' contact. The average annual income of ABP beneficiaries' rice out-growers was ₦ 564,235 while that of non-beneficiaries was ₦ 297,782. This implies that the beneficiaries are open to some opportunities than the non-beneficiaries. Thus, income has high tendency of driving the food security status. This finding in line with Ayinde *et al*., 2018 who reported income as a major determinants of food security among rice farmers in Kwara State.

Table 2 Socioeconomic Characteristics of ABP Beneficiaries and Non-Beneficiaries' Rice Out-Growers in the Kwara State.

	ABP Beneficiaries n=73				ABP Non-beneficiaries n=69			
Age(Years)	**Frequency**	**%**	**Mean**	**Covariance**	**Frequency**	**%**	**Mean**	**Covariance**
≤30	3	4.1	42	22.4	5	7.2	51	25.3
31-40	11	15.1			3	4.4		
41-50	39	53.4			34	49.3		
51-60	12	16.4			21	30.4		
Above 60	8	11.0			6	8.7		
Sex								
Male	52	71.2			41	59.4		
Female	21	28.8			28	40.6		
Marital Status								
Single	6	8.2			9	13.0		
Married	51	69.9			46	66.7		
Divorced	13	17.8			6	8.7		
Widow	3	4.1			8	11.6		
Level of Education (Years)								
0-5	17	23.3	13		34	49.3	6	
6-11	14	19.2			27	39.1		
Above 11	42	57.5			8	11.6		
Household Size (number)								
0-5	9	12.3	7	19.2	12	17.4	10	27.7
6-11	51	69.9			33	47.8		
Above 11	13	17.8			24	34.8		
Farming Experience (Years)								
1-5	15	20.5	9		23	33.3	9	
6-10	39	53.4			18	26.1		
Above 10	19	26.1			28	40.6		
Farm Size (Hectares)								
0-2	38	52.1	1.74	32.1	56	81.2	1.31	29.6
3-4	31	42.5			12	17.4		
Above 4	4	5.4			1	1.4		
Extension Contact								
1-5	14	17.1			22	31.9		
6-10	18	24.7			32	46.4		
Above 10	41	56.2	11		15	21.7	7	
Annual Income								
0-300,000	12.5	17.1				51.2	74.2	297,782
300,001- 600,001	42.2	57.8	564,235			17.8	25.8	
Above 600,001	18.3	25.1				0	0.0	

Source: Field Survey, 2019

Food Security Status of ABP beneficiaries Rice out-growers

Adopting the fundamental food security module of the United State Development Agency (USDA, 2000) which is comprisedof 16 established questions with scale linear ranging from 0-10, the degree of food insecurity faced by household was measure in terms of single number value. The results shows that more than 73.97% of rice-out-growers who are ABP beneficiaries were food secure while less than one-third were food insecure at dissimilar levels. There are more food insure rice-out-growers without hunger (17.81%) than those with moderate level of hunger. This findings concurs with Abdulazeez *et al*. 2018 who reported that farmer who participated in Kogi accelerated rice production programme (KARPP) where more food secure.

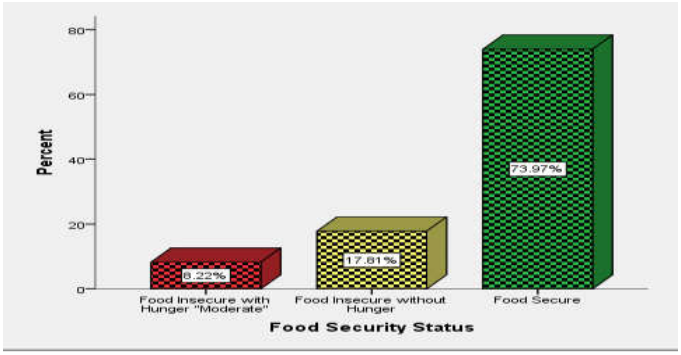


Fig 2 Food security Status of the rice out-growers who benefited from ABP

Food Security Status of ABP Non-beneficiaries Rice out-growers

The results revealed that about one-third (31.88%) of the ABP Non-beneficiaries rice out-growers were food secured, and largely over two-third of the out-growers were food insecure with varying levels of insecurity. About 8.70% were food insecure with severe hunger.

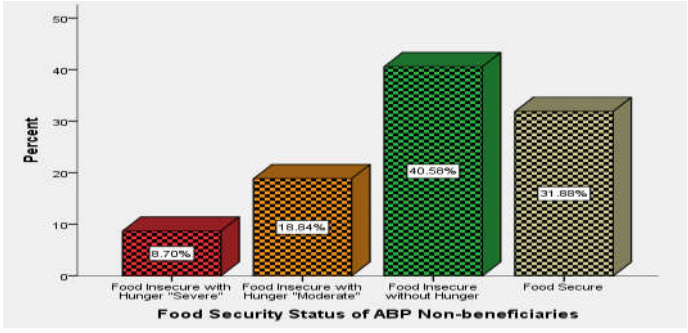


Fig 3 Food security Status of the rice out-growers who are non-beneficiaries of ABP

The model in equation 2 forecast the drivers of food security status among rice out-growers of ABP with 79.6% accuracy. The McFadden R-square of 0.542 was revealed, this implies

that about 54.2% of the drivers of food security status among rice out-growers of ABP were explained by the independent variables. The result of the log-likelihood ratio (-73.437) implied that the probability of the drivers of food security status were all explained by the dependent variables.

The coefficient of age is negative and statistically significant at lessthan 10% level of probability, thus there is an inverse relationship between the age of rice out-growers and level of food security implying that an older age translate to less food security.The marginal effect of 0.759 reveled that one additional year to age would raise the probability of being food insecure by 75.9%. This result is in line with Salau *et al*., 2019 who opined that an old household head is liable to larger household size and may lack the drive required to work for the upkeep and sustenance of the households. The coefficient of household size and dependency ratio were found to negative and statistically significant at less than 1% level of probability which also indicated an inverse relationship with food security. The findings is line with Abdulazeez *et al*. 2018 who opined that upsurge in the household size suggests that more people are consuming from the same resources, thus, a large household may experience less food supply amongst member when likened with a smaller household size. Also, the food security status of the household maybe questioned by any additional non-working household member. Membership of cooperative, farm size and income had positive drives on food security and are statistically significant at less than 1% less of probability. This implies that the more membership of cooperative a rice out-grower belongs, the greater the probability of being food secured. This is not surprising as cooperative is intended to improve the standard of living of her patrons. Higher income of the rice out-grower which might have resulted from large farm size being cultivated indicates greater probability food security. This finding is consistent with Salau*et al*. 2019and Abdulazeez *et al*. 2018 who reported positive and significant relationship of household income and food security.

Table 3 Factors Driving Food Security Status among Rice Out-Growers of ABP in Kwara State

	Coefficient	Standard error	T-value	Marginal effect	Prob /t/
constant	0.959	0.316	3.036		0.003*
Sex	0.744	1.108	0.674	0.183	0.502
Age	-0.538	0.201	1.791	0.759	0.077***
Household size	-0.825	0.316	3.031	0.959	0.003*
Educational level	0.253	0.430	0.345	0.022	0.288
Farming experience	0.374	0.419	0.795	0.373	0.688
Farm size	0.849	0.245	2.124	0.038	0.001*
Dependency ratio	-3.385	0.469	2.155	0.559	0.000*
Membership of cooperative	1.838	0.534	-3.442	-0.427	0.001*
Income	0.106	0.018	1.216	0.072	0.000*
Log-likelihood = -73. 437					
LR chi^2 (9) = 92.317					
McFadden R^2 = 0.542					
Cases properly predicted = 113(79.6%)					

*, **, and *** indicate statistical significance at 1, 5, and 10% probability levels, respectively

Source: Field Survey, 2019

CONCLUSION AND RECOMMENDATIONS

This study concludes that ABP had impacted the food security status of the rice out-growers. Age, household size, farm size, dependency ratio, membership of cooperative and income were statistically significant variables driving of food security among ABP rice out-growers in the study area. Nevertheless, the success of ABP should equally be extended to more rice out-growers in the state with adequate and constant interventions on annual basis by all levels of government. The extension agent must equally be equipped with training of market condition of rice at both local and international level. Farmers should constantly be educated on the danger of large households and non-working dependency on food security status.

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