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EVALUATING THE IMPACT OF ANCHOR BORROWER PROGRAMME ON THE OUTPUT OF RICE FARMERS IN BILLIRI LOCAL GOVERNMENT AREA OF GOMBE STATE

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ABSTRACT

This study assessed the impact of the Anchor Borrowers Programme (ABP) on rice farmers' output in Billiri Local Government Area, Gombe State, Nigeria. Data were analyzed using descriptive statistics and the difference-in-difference estimation model. Results showed that rice farming was dominated by male farmers with an average age of 47 years for participants and 48 years for non-participants. About 64.30% of participants received credit from ABP, 61.90% received seeds, and 53.57% received fertilizer. The difference-in-difference estimation had a p-value of 0.033, significant at 5%, indicating that ABP positively impacted rice farmers' output. Additionally, 64.71% of ABP participants cited consumer preference for foreign rice as a major challenge, while 61.63% of non-participants identified high fertilizer costs as a significant constraint. The study recommends enhancing public awareness about the benefits of consuming locally produced rice to boost support for local farmers. It also advises the Nigerian government to reassess fertilizer subsidies to help lower production costs for farmers.

Keywords: Impact, Rice output**,** Anchor Borrowers Programme

INTRODUCTION

The agricultural sector's immense potential according to Adesina (2013) has captured global attention, as stakeholders and governments around the world acknowledge that insufficient support for locally grown crops could significantly harm Nigeria's economy. This includes potential revenue loss, high unemployment, inflation, declining foreign reserves, increased inventory, the proliferation of sub-standard crops, price discrimination, rural-urban migration issues, and low productivity (Adesina, 2013). As a result, Nigeria has implemented an embargo on certain agricultural imports like foreign rice, dairy products, and tomatoes through land borders to manage their influx (CBN, 2016). However, Nigerian farmers' low productivity stems from various factors, notably the lack of agricultural credit facilities. Many rural farmers engage in subsistence farming without adequate funds to expand or adopt modern mechanized practices, hindering their ability to meet Nigeria's food demands (Saheed, 2014). Moreover, funding sources for rural farmers to boost productivity are limited.

Rice holds immense economic importance globally, serving as a staple food for over half of the world's population and a key cereal crop in both developing and developed nations, including Nigeria (Ajala and Gana, 2015; Dogara and Jumare, 2014). Nigeria was identified as the world's second-largest rice importer by December 2016, prompting the government to implement measures such as a total ban on rice imports and initiatives to boost domestic production, despite the country's potential for achieving self-sufficiency (Akinbile*et al*., 2018).

Drought poses a significant challenge to rice production in Northern Nigeria due to the crop's high water requirements of 1200 mm to 1600 mm of evenly distributed rainfall throughout its growth cycle (Kamai *et al.*, 2020). This vulnerability occurs during both vegetative and reproductive stages. Additionally, various constraints hinder Nigerian rice farmers, impacting production, processing, storage, and marketing, thereby reducing output and economic value (Akinbile*et al*., 2018).

Previous administrations introduced agricultural and rural development programs to address sector challenges and enhance their importance, encountering numerous hurdles. In 2015, the Federal Government, in collaboration with the Central Bank of Nigeria (CBN), launched the Anchor Borrowers Programme (ABP) aimed at promoting agricultural development, improving livelihoods, and boosting productivity among smallholder farmers in Nigeria (Olughu*et al*., 2018). The program aims to support smallholder farmers with both in-kind and cash inputs to increase production, enhance livelihoods, and ensure consistent supply to agro-processors by fostering robust connections between processing anchor companies and smallholder farmers. Launched to align with the Central Bank of Nigeria's developmental objectives, the program seeks to bolster agricultural output and mitigate the adverse effects of food imports on the country's foreign reserves (Wijaya *et al.*, 2020).

Over nine years have passed since the inception of the Anchor Borrowers Programme (ABP), providing sufficient time to evaluate its impact on farmers' returns and agricultural commodity output. The study by Onoja *et al*. (2024) on the impact of the Anchor Borrowers' Programme (ABP) on rice production in North-Central Nigeria demonstrated a positive effect on farmers' output. However, it's crucial to recognize that the impact of such programmes can vary across different regions due to diverse political, cultural, and economic factors. This prompted the current research to evaluate the influence of the ABP on rice farmers' output in Northeastern Nigeria. Moreso, Salisu *et al.* (2022) evaluated the impact of the credit provided by the Anchor Borrowers' Programme (ABP) on the productivity of rice farmers. However, their study focused solely on the credit aspect, overlooking the fact that the ABP offers more than just financial support to enhance production. This highlights the need for the current research to assess the overall impact of the various forms of assistance provided by the program on rice farmers' output. Onoja *et al.* (2024) and Salisu *et al.* (2022) did not employ the double difference estimation (DDE) model, despite it being a robust tool for impact studies. However, this study employed the DDE model.

Various financing policy initiatives have been introduced to enhance the performance of small-scale farmers and transform Nigeria's agricultural sector, yet the intended outcomes have not been fully realized. This study aims to explore the potential reasons for these shortcomings. Despite the launch of the Anchor Borrowers' Programme (ABP) in 2015 by the Central Bank of Nigeria and the Federal Government, farmers continue to struggle with limited access to finance and profitable markets, keeping them in a cycle of poverty. This raises questions about the program's efficiency. Therefore, this study aims to evaluate the impact of the ABP on rice farmers' output in Billiri Local Government Area, Gombe State.The specific objectives of the study are to:

i. identify the farm inputs supplied to rice farmers by ABP;
ii. determine the impact of the ABP on the output of rice farmers in Billiri Local Government Area of Gombe State, and
iii. identify the constraints farmers encounter in the Anchor Borrower Programme.

METHODOLOGY

Study Area

The study was conducted in Billiri, situated with its administrative headquarters in the town of Billiri, positioned south of Gombe at latitude 9°51'53" N and longitude 11°13'31" E. The region typically receives an average annual rainfall of approximately 1,600mm, with monthly precipitation varying from 0.0mm in December and January to around 343mm in July. Rainfall usually begins in April and ends by October, though these patterns have been affected by climate change. The dry season spans from November to April, characterized by cold, dry harmattan conditions devoid of rainfall (Adamu et al., 2013). The predominant language spoken is Tangale, with English and Hausa also used. The majority of residents are primarily engaged in farming, while during the dry season, they participate in other activities such as carpentry, welding, and blacksmithing (Nayomi et al., 2016).

Sampling Procedure

A multi-stage sampling approach was utilized to select farmers for this study. Firstly, Gombe State was purposively chosen from all Northeast States in Nigeria due to its significant rice production. Secondly, Billiri Local Government Area (LGA) was purposively selected from the 11 LGAs in Gombe State because of its high concentration of rice growers. Thirdly, four villages were purposively selected based on their substantial populations of rice growers. Fourthly, farmers were selected using simple random sampling from these villages to ensure unbiased representation. From a total sample frame of 301 rice growers, 172 respondents were randomly selected as the sample size using the Yamane formula. (see Table 1)

Yamane (1967) formula is expressed below as:

$$n = \frac{N}{1 + N(e)^2}$$

Where,
n= Sample size (Total sample size)
N= Population size (Total sample frame)
e= Level of significance (set at 0.05 for this study)
To determine further the proportion of the respondents (sample size per village), Yamane (1967) sampling method for determining of respondents was used, ie

$$\text{Sample size of village} = \frac{\text{Sample frame of village x Total sample size of all villages}}{Total\ saple\ frame\ of\ all\ villages}$$

Table 1: Population and Sample Size of Rice Farmers

State	LGA	Villages	*Sample Frame	Sample size	Participants	Non-participant
Gombe	Billiri	Lawushi Daji	71	41	20	21
		Sansani	80	46	23	23
		Lawiltu	83	47	24	23
		Ladongor	67	38	19	19
		4	301	172	86	86

***Source: Gombe State Ministry of Agriculture

Method of Data Collection

Primary data collected via questionnaire administration. Data were collected on the socio-economic profiles of respondents, their rice cultivation outputs and income, the benefits they received from the Anchor Borrowers' Programme (ABP), and the challenges faced by rice farmers in the study area.

Data Analysis

Data were analyzed using descriptive statistics and the double difference estimation (DDE) model. The DDE model was employed to assess the impact of the Programme on rice farmers' output. The DDE approach is a widely utilized technique in impact evaluation studies. By integrating both before-and-after and treatment-control group comparisons, this method is intuitively appealing and has seen extensive application across various fields, including economics, public policy, health research, management, and more (Anders and Gustavo, 2019) The double difference method is a recognized tool for evaluating Programme impacts. This approach eliminates biases in post-intervention comparisons between the treatment and control groups, which may arise from persistent differences between the groups. It also addresses biases in within-group comparisons over time that could result from trends influenced by other factors affecting the outcome (Wooldridge, 2011).

Model Specification

$$DD^s = \left[\frac{1}{p}\sum_{i=1}^{i=p}(Y_{1ia} - Y_{1ib})\right] - \left[\frac{1}{c}\sum_{j=1}^{j=p}(Y_{0ja} - Y_{0jb})\right]$$

Where:

i= i^{th}Nunber of participants

j= j^{th} Number of non-participants (control)

Y_{oja}= Non-participants' total at output j^{th}time “a” (during) of the programme

Y_{ojb} = Non-participants total outputj^{th} at time “b” (before) of the programme

Y_{1ia}= Participants' total outputi^{th}at time “a” (during) of the programme

Y_{1ib} = Participants total outputi^{th}at time “b” (before) of the programme

C = number of individuals in the control group (non-participants)

P = number of participants

DD^S = Double difference (₦)

RESULTS AND DISCUSSION

Input Supplied to the Rice Farmers by ABP

Table 2 illustrates the benefits received by rice farmers through the Anchor Borrowers Programme. A majority (62.79%) of farmers obtained credit from the programme, while 54.65% received insecticides, 60.47% received seeds, 53.49% received sprayers, and another 54.65% received fertilizers. These inputs and equipment are expected to enhance farmers' yields and contribute to economic improvement. This aligns with findings from Akinwale (2021), who researched the Anchor Borrowers Programme in Nigeria, highlighting its role in connecting farmers to markets and providing access to inputs, whether in cash or kind, to bolster production.

Table 2: Farm Input Introduced by the APB to Beneficiaries (n=86)

Credit Received	Frequency	Percentage of cases
Credit	54	64.29
Insecticide	46	54.76
Fertilizer	45	53.57
Sprayer	47	55.95
Seed	52	61.90
Total	***244**	**290.48**

Source: Field Survey, 2023
* = Multiple Responses

Impact of Anchor Borrowers Programme (ABP) on Rice Farmers

The results in Table 3 show a difference-in-difference estimation coefficient of 32.849 with a P-value of 0.033, which is significant at the 5% level. This indicates that participants (treated) in the Anchor Borrowers Programme saw their outputs increase by a factor of 32.849 compared to non-participants (control). Thus, the ABP positively impacts rice farmers' output in the study area. Notably, the difference between participants and non-participants before the ABP was statistically insignificant (P-value of 0.845), while the difference during the ABP, when farmers received inputs like seeds, fertilizer, credit, and insecticides, was statistically significant at 1% (P-value of 0.005). This finding aligns with Onoja *et al*. (2024) and Salisu *et al*. (2022) who all indicated that the ABP had positive impact on the output of rice farmers in Nigeria.

Table 3: Difference-In-Differences Estimation Results

Outcome var.	Output	S. Err.	|t|	P>|t|
Before				
Control	24.000			
Treated	21.872			
Diff (T-C)	-2.128	10.864	-0.20	0.845
After				
Control	27.395			
Treated	58.116			
Diff (T-C)	30.721	10.864	2.83	0.005***
Diff-in-Diff	**32.849**	**15.364**	**2.14**	**0.033****

Source: Field Survey (2022)
R-square: 0.04
** Means and Standard Errors are estimated by linear regression*
***Inference: *** p<0.01; ** p<0.05; * p<0.1*
**Number of observations in the DIFF-IN-DIFF: 344*

	Before	*After*	
Control: 86		*86*	*172*
Treated: 86		*86*	*172*
	172	*172*	

Constraints Encountered by Rice Farmers

Table 4 outlines the challenges faced by participants in the Anchor Borrowers Programme. The data shows that 64.71% of rice farmers struggled with customers' preference for foreign rice, 56.47% dealt with pest issues, and 52.94% cited the late arrival of inputs as a challenge. Additionally, 50.59% were affected by drought, and 49.41% pointed to inadequate storage facilities as a major issue. These findings are consistent with Onu (2018), who reported that consumers prefer imported rice due to its ease of preparation. Similarly, Iweka and Ederewhevbe (2018) observed that in southeast Nigeria, the perceived quality of local rice impacts consumer preferences. The pest problems align with Ravinder (2021), who noted that farmers are moving away from rice production to other crops like

vegetables and chickpeas due to the prevalence of rice yellow mottle virus (RYMV)..

Table 5 highlights the challenges faced by non-participants in the study. It shows that 61.63% struggled with the high cost of fertilizer, 51.16% encountered financial difficulties, and 53.49% identified pests as a major issue. Additionally, 48.84% cited inadequate storage facilities, while 44.19% pointed to consumer preference for foreign rice as a challenge. These findings align with Nkwabi *et al.* (2021), who identified pests, diseases, flooding, drought, and high input costs as significant constraints for rice farmers.

Table 4 Constraints Faced by Rice Farmers (participants) (n=86)

Constraints	Frequency	Percentages of Cases	Rank
Preference for foreign rice	55	64.71	1st
Pest	48	56.47	2nd
Drought	43	50.59	4th
Late arrival of input	45	52.94	3rd
Inadequate storage facilities	42	49.41	5th
Total	***233**	**274.12**	

Source: field survey, 2023

* = Multiple responses

Table 5. Constrains Faced by Rice Farmers (non-participants) (n=86)

Constraints	Frequency	Percentages of Cases	Rank
Preference for foreign rice	38	44.19	6th
Pest	46	53.49	2nd
High cost of fertilizer	53	61.63	1st
Flooding	41	47.67	5th
Inadequate storage facilities	42	48.84	4th
Finance	44	51.16	3rd
Total	***264**	**306.98**	

Source: Field survey, 2023

* = Multiple responses

CONCLUSION AND RECOMMENDATION

In conclusion, the Anchor Borrowers' Programme (ABP) positively impacted rice production in the study area, as evidenced by the significant results of the difference-in-difference model. However, farmers faced several challenges, including the late arrival of inputs, drought, consumer preference for foreign rice, inadequate storage facilities, pests and diseases, and insufficient credit. To further enhance rice production in the study area and across the nation, it is crucial to address these constraints with targeted interventions.

It is recommended to increase awareness of the benefits of consuming local rice to encourage patronage and motivate local farmers to boost their production. Given the high cost of fertilizer as a significant constraint for non-participant rice farmers, it is suggested that the Nigerian government review and enhance fertilizer subsidies to make them more affordable. Additionally, more programs should be introduced to support farmers with necessary farm inputs and resources to improve their output, efficiency, and profitability.

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