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Impact of Anchor Borrowers Programme (ABP) on Smallholder Rice Farmers in Kebbi State, Nigeria

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A B S T R A C T

The study examined the impact of Anchor Borrowers Programme on smallholder rice farmers in Kebbi State, Nigeria. A multi stage sampling technique was used to select 500 beneficiary and non-beneficiary rice farmers each giving a sample size of 1000 farmers for the study. Data collected were analysed using Descriptive statistics such as percentages, frequency distribution, performance indices computation, t-test, Chow-test and production function analysis. The results of the analysis of the Chow F computation indicated that there is a significant difference in the production function of beneficiaries and non-beneficiaries respectively since the computed Chow F value of 21.128 was greater than that of the critical F- value at the 0.01 probability level. This is an indication that the ABP performed well. The results further revealed that the two groups of rice farmers were not operating on the same production function. ABP significantly and positively affected output and income of the beneficiary farmers in the study area. It is recommended that Policies should be tailored towards inclusiveness of more farmers into the ABP. The programme should also be extended to cater for other sub-sectors of the Agricultural sectors such as Livestock and Aquaculture.

INTRODUCTION

Which prompted the government to look for other sources of income. One of its main objectives is to pursue agricultural growth in order to reduce the nation's reliance on food imports, which cost hundreds of millions of dollars every year. It has also launched an effort to shift attention away from oil and toward projects related to industry, agriculture, and the development of solid minerals.

It is widely accepted that the most significant tool for raising farm productivity is financing to farmers. This is particularly true for smallholder peasants, for whom capital scarcity appears to be a major impediment to farm development.

Nigeria has struggled with food insecurity for a long time, and as a result, there has been widespread hunger, major importation, and societal disorders, among other issues. A vast number of agricultural projects were implemented with the express purpose of increasing food production and reversing the trend of food insecurity in order to address the problems caused by it.

In an attempt to address the issues plaguing the agriculture sector and assist Nigeria in resolving the food insecurity that resulted in imports and an over reliance on oil money, Evbuomwan and Okoye (2017) have reported. In order to achieve rice self-sufficiency, the Nigerian government has put in place a wide range of measures in the rice industry. Agricultural Transformation Agenda (ATA, 2011-2015), the Nigerian National Rice Development Strategy (NRDS, 2009-2018), the Presidential Initiative on Increased Rice Production (2002-2007), the Rice Intervention Fund (RF, 2011), and the Anchor Borrowers Program (ABP-2015) are a few of these programs.

In keeping with its development role, the Central Bank of Nigeria (CBN) launched the Anchor Borrowers' Programme (ABP). President Muhammadu Buhari (GCFR) introduced the program on November 17, 2015, with the goal of connecting smallholder farmers (SHFs) of the necessary essential agricultural commodities with anchor enterprises that process them. The main goals of the ABP program are to improve the production of certain commodities, such as rice and soybeans, stable the input supply to agro-processors, and solve the negative food balance of payment in the nation by giving small holders cash (for labor on the farm) and in-kind farm inputs. Following harvest, the SHF delivers his or her produce to the agro-processor (Anchor), who credits the farmer's account with the appropriate amount of cash.

In response to fluctuating crude oil prices and their impact on Nigeria's revenue profile, the Federal Ministry of Agriculture and Rural Development, State Governors, millers of agricultural produce, and small-holder farmers participated in stakeholder consultations that led to the development of the program. Although these initiatives have made loans and other inputs for rice growing more widely available, there is currently no documentation of the impact, effect, or performance of these initiatives, and there is little coordination.

Numerous studies have been conducted regarding the effectiveness of government programs, including those by Alston and Porde (2001), Alabi (2003), Alkire (2007), and Ezeokeke et al. (2012), among others. The majority of research looked at how well government initiatives like Bank of Agriculture, Microfinance Banks, National Programme for Food Security (NSPFS), International Fund for Agricultural Development (IFAD), and Fadama III performed. As a result, there is a dearth of published research on the effects of the Anchor Borrowers Program (ABP) on the rice farmers who benefit in Nigeria generally and Kebbi State specifically.

To determine whether or whether the program has succeeded in achieving its objective, an evaluation of the impact of ABP must be conducted. It is anticipated that if the program is carried out correctly, food security, poverty reduction, increased farmer income, and the non-oil sector of the economy—particularly agriculture—will all result. The goal of the study is to evaluate the ABP's effectiveness or lack thereof. Evaluating the program's effects on the rice farmers who stand to gain from it could help policymakers determine whether the initiative is effective or not. The study aims to furnish prospective investors with guidance on the optimum utilization of limited resources in their rice farming investment drive. The program's viability in terms of expanding to other States where it hasn't been adopted is also predicated on the data that the study is expected to produce.

The purpose of the ABP is to help smallholder farmers in the agriculture sector who don't have enough money to maintain their operations financially. It must be paid back within a predetermined window of time. As per the CBN Governor, since the program's launch to date, 3,107,890 farmers in the 31 States of the Federation and Federal Capital Territory have received financing from participating financial institutions for the cultivation of 3,801,897 hectares across 21 commodities. Coincidentally, on November 17, 2015, the Program was initially introduced in Kebbi State. It is hoped that if the program is carried out correctly, food security, poverty reduction, and the non-oil sector of the economy—particularly agriculture—will all result. The goal of the study is to assess the ABP's effectiveness or lack thereof. Policymakers may be advised as to whether or not the program is successful by looking at how it affects rice producers' income.

Additionally, the study will offer guidance to potential investors on how to allocate limited resources in their investment drive toward rice farming. The data that may possibly come from the study is also a precondition for the program's viability in terms of its expansion to other States where it hasn't yet been adopted. The study's findings are intended to offer early indicators of the measures needed to maintain the program's goal of increasing agricultural output and improving Nigeria's food balance of payments. Additionally, the results of this study may help decision-makers assess how well the Anchor Borrowers Program is doing and, if necessary, make any necessary adjustments.

METHODOLOGY

The research was carried out in Nigeria's Kebbi State. The study employed a multistage sampling procedure to choose the participants. First, the seven (7) Local Government areas (LGA) with the largest concentration of rice farmers in the State who are beneficiaries of the Anchor Borrowers Program were purposefully chosen. Suru, Brinin-Kebbi, Bunza, Argungu, Augie, Dandi, and Jega are the LGAs. The second step involves the deliberate selection of two villages or communities from a total of fourteen (14) local government areas, chosen based on the number of rice farmers who are beneficiaries of the Agricultural Bank of Pakistan program. Thirdly, 500 beneficiary and non-beneficiary rice farmers were proportionately chosen at random from each of the 14 villages/communities, providing a sample size of 1000 rice farmers for the study. Data for the study were gathered using a pretested semi-structured questionnaire. Information on the socioeconomic traits of the research area's beneficiary rice farmers was gathered. Information on input and output was requested regarding costs, production returns, and the advantages of the ABP for the rice farmers who were beneficiaries, among other things. The Chow F Test, Performance Index Computation, and Descriptive Statistics were utilized to accomplish the particular goals of this investigation.

The Chow test was utilized to determine whether there was a significant variation in the production function intercept between the sampled groups in order to evaluate the effectiveness of the ABP. The Chow test statistic is frequently employed in program evaluation, according to Dougherty (2007), to ascertain whether the program had an influence on various sub-group populations.

It is expressed mathematically as :

$$F = \frac{(RSS - RSS_1 + RSS_2)/k}{RSS_1 + RSS_2/N_1 + N_2 - 2k}$$

Where F = Chow F

RSS = Residual sum of square for pooled sample
RSS_1 = Residual sum of square for beneficiaries
RSS_2 = Residual sum of square for non-beneficiaries
N_1 = Number of beneficiaries sampled
N_2 = total number sampled
K = Number of parameters

RESEARCH RESULT AND DISCUSSION

1. Chow Test

The performance of ABP was determined by computing the Chow F statistic. The data were fitted with four distinct functional forms, and the lead equation was selected using standard statistical, econometric, and economic criteria. In order to help with the Chow F computation, regression analysis was used to determine the incorrect sum of squares. Tables 2 through 7 provide an

overview of the projected four production functions for the beneficiaries, non-beneficiaries, and pooled sample.

Based on the magnitude of the coefficient of multiple determination (R2), the number of significant variables, and the magnitude of the F-statistics, the estimated coefficient of regression analysis in Tables 2 to 3 revealed that the Cobb-Douglass functional form was the lead equation for this category. With a (R2) value of 0.621, it was evident that 62% of the variation in the rice output (y) was explained by the independent variable. At the 1% level, the F-ratio of 10.212 was statistically significant. The three inputs—seed, fertilizer, and capital—were important in explaining the recipients' rice production.

Following standard statistical, economic, and econometric criteria, such as the size of the coefficient of multiple determination (R2), the number of significant variables, and the magnitude of the F-Statistic, the linear function from Tables 4 to 5 was selected as the lead equation. With a (R2) value of 0.612, the independent variable was able to explain 61% of the variation in the output of rice (y). At the 1% level, the F-ratio of 5.466 was statistically significant. Agrochemicals and capital were the two inputs that significantly contributed to the explanation of non-beneficiaries' rice yield.

A lead equation was also selected from Tables 6 to 7 based on the linear function's favorable disposition in teams of statistical, economic, and econometric criteria. The number of significant variables, the magnitude of the F-statistic, and the coefficient of multiple determination (R2) were used to choose or pick the linear functional form. With a (R2) value of 0.566, it was evident that 56.6% of the variation in rice output (y) was explained by the independent variable. At the 1% level, the F-ratio of 6.287 was statistically significant. The pooled sample's rice yield was significantly explained by two inputs: better seed and capital.

The performance of ABP was further investigated by calculating the chow F. There is no shift in the intercepts of the production functions of beneficiary and non-beneficiary farmers, according to the hypothesis that both sets of farmers were operating on the same production function. Nevertheless, the estimated chow F was found to be 21.128, exceeding the crucial F value of 6.287 at the 0.01 probability level and 4 degrees of freedom, according to the results. According to the study's findings, the two farmer groups were not using the same production function. The output, revenue, and standard of living of the rice farmers in the research area who benefited from ABP were considerably and favorably impacted..

Table 2. Regression results for the ABP beneficiaries

	Functional Forms			
Variable	**Linear**	***C*obb-Douglass**	**Semi-log**	**Exponential**
Constant	6345.216 (8.817)***	9.738 (8.243) ***	-154705.652 (-1.735)*	12.024 (82.17) ***
Seed	0.650	0.144	12108.180	6.3487007

	(1.197)	(1.907) **	(1.497)	(1.877) **
Fertilizer	0.120 (0.103)	0.316 (2.478) ***	18260.133 (2.574) ***	-2.343E002 (-0.551)
Agrochemicals	0.100 (-0.043)	- 0.032 (-0.314)	-7060.100 (-1.050)	6.966E-006 (-2.212)
Labour	0135 (0.552)	- 0.009 (-0.770)	-5341.105 (-1.008)	-2.341E-005 (-0.121)
Capital	6.187 (4.985)***	0.249 (6.032) ***	16342.122 (4.013) ***	6.934E-004 (5.272) ***
R^2	0210	0.621	0.355	0.172
R^2 Adjusted	0.087	0.546	0.310	0.104
F- Statistics	3.0054	10.212	4.035	3.660

Survey data, 2023

***, ** and * Implies significance at 0.01, 0.05 and 0.10 probability levels, respectively. Figures in parentheses are the respective t-ratios.

Table 3. ANOVA Table for the ABP beneficiaries

Model	**Sum of Square**	**Degree of Freedom**	**Means Square**	**F**	**Significance**
Regression	8.934	5	1.786	6.287***	0.000[b]
Residual	7.057	42	0.153		
Total	15.991	47			

Field survey data, 2023

*** Implies statistically significant at the 0.01 probability level.

Table 4. Regression result for the ABP non-beneficiaries

	Functional Forms			
Variable	**Linear**	***C*obb-Douglass**	**Semi-log**	**Exponential**
Constant	10325.210 (6.124)***	10.454 (7.223)***	100271.014 (0.610)	10.886 (52.167)***
Seed	- 0.549 (-0.342)	-0.018 (-0.673)	-2137.910 (-317)	-8.567E-004 (-1.024)
Fertilizer	- 6.319 (-1.896)*	0.057 (0.477)	-505.156 (-0.018	4.006E-005 (-2.011)**
Agrochemicals	-7.188 (-0.610)	-0.176 (-1.551)	-16540.118 (-1.561)	-7.404E-005 (-0.564)
Labour	-0.766 (-0.318	-0.358 (-1.544)	-1656.103 (-1.553)	-8.035E-005 (-0556)
Capital	23.788 (4.019)***	0.437 (3.008)***	41321.034 (3.877)***	0.010 (2.984)***
R2	0.612	0.311	0.315	0.255
R2 Adjusted	0.515	0.225	0.264	0.194
F- Statistics	5.466	4.377	5.007	3.770

Survey Data, 2023

***, ** and Implies significance at 0.01, 0.05 and 0.10 probability levels, respectively. Figures in parentheses are the respective t-ratios.

Table 5: ANOVA Table for the ABP non-beneficiaries

Model	**Sum of Square**	**Degree of Freedom**	**Means Square**	**F**	**Significance**
Regression	136781042310.532	5	27880357911.342	5.466***	0.000[b]
Residual	302243668740.346	46	5101432990.108		
Total	439024711050.878	51			

Table 6. Regression results for the ABP pooled sample

	Functional Forms			
Variable	**Linear**	**Cobb-Douglass**	**Semi-log**	**Exponential**
Constant	1211380.410 (8.457)***	9.787 (6.445)***	20639.405 (0.145)	10.557 (42.381)***
Seed	-11346.002 (-3.214)***	-0.166 (-0.0427)	8431.253 (0.413	-0.112 (-2.720)***
Fertilizer	-0.031 (-0.448)	0.030 (0.329)	3284.010 (0.546)	-0.001 (-0.710)
Agrochemicals	-0.116 (-0.523)	-0.812 (-0578)	-6284.110 (-1.005)	-0.003 (-0.614)
Labour	0.221 (0.301)	-0.042 (-0.539)	-2.4420 (-0235)	-0.089 (-0.557)
Capital	8.624 (4.702)***	0.123 (3.418)***	13047.105 (2.422)***	0.000 (4.661)***
R2	0.566	0.186	0119	0.114
R2 Adjusted	0.510	0.128	0.064	0.100
F- Statistics	6.287***	2.843	1.701	5.010

Survey data, 2023

***, ** and * Implies significance at 0.01, 0.05 and 0.10 probability levels, respectively. Figures in parentheses are the respective t-ratios

Table 7. ANOVA Table for the ABP Pooled Sample

Model	Sum of Square	Degree of Freedom	Means Square	F	Significance
Regression	148632452419.387	5	29375440653.780	6.287***	0.000[b]
Residual	729833543810.450	171	4651077321.086		
Total	878465996229.837	176			

Field survey data, 2023

*** Implies statistically significant at the 0.01 probability level.

2. Benefits of Anchor Borrowers Programme

The study found that farmers under the Anchor Borrowers Programme benefitted from the in one way or the other. The results of the Benefits that accrued to the beneficiary farmers are presented in Table 8.

Table 8. Accrued Benefits of ABP to smallholder rice farmers

Benefits	Frequency*	Percentage	Ranking
Credit facilities	499	99.8	1
Improved seed	496	99.2	2
Agrochemicals	488	97.6	3
Fertilizer	437	87.4	4
Marketing services	385	77.0	5
Extension services	350	70.0	6
Pumping machine	315	63.0	7

Survey data, 2023

* Multiple responses were recorded.

Results in Table 8 showed that majority (99.8%) of the beneficiary farmers had access to credit facilities. The implication is that, the respondents will be able to expand their farm sizes, hire labour, purchase more agro-inputs and have enough capital bases that could improve their living conditions.

Results in Table 8 showed that majority (99.2%) of the beneficiary farmers obtained improved seed from the programme. Secured improved seed has a tendency to increase their yield and also improve their income.

Furthermore, 7.6% of the total respondents benefitted from Agrochemicals such as herbicides, pesticides, among others. These agrochemicals enhance the productivity of the farmers.

Results further revealed that majority (87.4%) of the respondents benefitted from Fertilizer. This suggests that ABP beneficiary farmers received support of fertilizer in order to improved their performance.

Results further revealed that 77% of the beneficiary farmers benefitted from marketing services. These marketing services involve the anchor companies such as WACOT rice mill, Labana rice mill serving as a market for their paddy rice. The beneficiary farmers do not need to take their paddy to the market for sales as the companies automatically serve as market for their products. The implication of selling directly to the anchor companies reduces transportation cost and other charges in the market thus also leading to higher profit/ income being realised.

Results further revealed that 70% of the respondents benefitted from extension services. These extension services include trainings in the form of capacity building particularly on new innovations and farming practices. This enhances the skill of the farmers leading to more expertise in farming.

Results also showed that 63% of the beneficiary farmers benefitted from pumping machines. These machines aided their farming operations particularly during the dry season, making it possible for many of the farmers to go into dry season farming.

CONCLUSIONS

Based on the findings, the study concludes that the performance of Anchor Borrowers Programme was high in the following component; ABP significantly improved the crop output of beneficiaries as compared with the non-beneficiaries. The study further revealed that ABP had significant impact on the output of the beneficiary rice farmers. Although there were benefits that accrued to the beneficiaries of the programme, which translated into increased outputs, certain problems were identified to be constraining the attainment of the overall objectives of the programme.

REFERENCES

Ajayi, A.R. (2000), An Ex-post Evaluation of the Performance Indices of the Ekiti – Akoko Enclave Agricultural Development Programme, Ondo State, Nigeria. Application for Tropical Agriculture 5(1):48-5

Akambi, F. (2015). How to benefit from CBN's loan: "The D ynamics of the Central Bank of Nigeria's Anchor Borrowers Programme. http://www.financialwatchngr.com/2015/11/22/how-to-benefit-from-cbns- loan, the anchor-borrowers-programme/Nov 22. 2015

Alabi R. A. (2003). Human Capital as Determinant of Technical Efficiency of Cocoa-Based Agroforestry System. *Food, Agriculture and Environment* 1(3): 277 – 281.

Alkire, S. and Foster J. (2007) Counting and Multidimensional Poverty Measurement. OPHI working paper No. 7, December 2007.

Alston J.M., and Parde, P.G. (2001). Attribution and other Problems in Assessing Returns to Agricultural Research and Development. *Agricultural Economics,* 25, 141-152.

Boateng, G.O., Boateng A.A. & Bampoe, H.S. (2015). Microfinance and Poverty Reduction in Ghana: evidence From Policy Beneficiaries. *Review of Business and Finance Studies* 6(1): 99-108.

Central Ban of Nigeria (CBN) (2014). Guidelines for Commercial Agriculture Credit Scheme (CACS) Central Bank of Nigeria, Abuja: Development Finance Department.

Dauda, S. and Ajayi, A.R. (2009), Assessment of the Performance of the National Special Food Security Programme in Benue State, Nigeria. *Journal for Social Science,* 21(1): 25-32

Dougherty, C. (2007). *Introduction to Econometrics.* Oxford University Press. ISBN, Pp 194

Emiefile, G. (2016). Anchor Borrowers Programme: 78000 Farmers Reap Gains BukolaIdowu – Apr 11, 2016 4:39am, leadership. Ng

Evbaomwan, G. and Okoye, L. (2017), Studied the Prospects of Anchor Borrowers Programme in Nigeria. Proceedings of the International Farm Management Congress. Vol. 2

Ezeokeke, C., Anyanwu, N., and Okoro, V. (2012). Impact of Fadama II Project on Feed, Food and Poverty in Imo state, Nigeria. *International Journal of Applied Sociology*, 2(3), 22-24.

Gona, A., Alhaji, I.O. and Kaka, Y. (2020), Relative Profit Efficiency of Anchor Borrowers Programme (ABP) Beneficiary and Non-beneficiary Rice Farmers in Kebbi State, Nigeria. *Journal of Development and Agricultural Economics*. Vol. 12 (4), Pp 238-245

Gona, A., Mahmud, A., and Maikasuwa, M.A. (2020), Effect of Anchor Borrowers Programme (ABP) on Technical Efficiency of Beneficiary Rice Farmers in Kebbi State, Nigeria. *International Journal of Agricultural Economics*. Vol. 5. No. , Pp 106-113

Gona, A., Mahmud, A., Ogolekwu, A.I., Maikasuwa, M.A., and Kaka, Y. (2020), Effect of Anchor Borrowers Programme (ABP) on Profitability and Income of Beneficiary Rice Farmers in Kebbi State, Nigeria. *International Journal of Sustainable Development Research*, 6 (3): Pp 43-48

National Population Commission (NPC) (2006). Population figure. Federal Republic of Nigeria, Abuja. Retrieval from https://www.npc.gov.ng

Nkonya, E., Pender, J., Kato, E. Oni O. Dayo P, Ehui, E. (2010) Nigeria Strategy Support Program IFPRI Brief No. 19.

Olubanjo O.O. and Oyebanjo, O. (2005), Determinants of Profitabity in Rain-Fed Paddy Rice Production in ikenne Agricultural Zone, Ogun State, Nigeria in Africa Crop Science Conference Proceedings, Vol. 7. Pp. 901-903

retrieved on the 13th of October 2010.www.nigeriaonline/nigerianeconomy.org

Oshewolo, S. (2010). Galloping Poverty in Nigeria: An Appraisal of Government Interventionist Policies. *Journal of sustainable development in Africa*, 12(6), 264-274.

Owolabi, T.O., Adenyi, O.B., Ojo, M.O. and Olaleye, R.S. (2016), Assessment of the Impact of Animal Traction Technology Usage on Crop Farmers Income in Northern Wesstern Nigeria. *Journal of Animal Production Research.* National Animal Production Research Institute, Ahmadu Bello University, Shika-Zaria, Kaduna State, Nigeria. ISSN 0189-0514