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ASSESSING INCOME EFFECT OF RURAL DEVELOPMENT PROGRAMMES: A CASE STUDY OF COMMUNITY-BASED AGRICULTURE AND RURAL DEVELOPMENT PROJECT IN KWARA STATE (NIGERIA)

Matthew Olaniyi Adewumi✉, Abraham Falola, Adefemi Oluwadamilola Odunlade

University of Ilorin

Abstract. Globally, governments initiate various programmes to address income poverty among rural farmers. However, studies that focus on the impact of such programmes on farmers' income are either scanty or non-existent, especially in developing countries, including Nigeria. Therefore, this study examines the impact of Community-Based Agriculture and Rural Development Project (CBARDP) in Kwara State, Nigeria. Data were obtained from 120 respondents comprising 60 beneficiaries and 60 non-beneficiaries of the programme. Descriptive statistics and double-difference estimator were used for the data analysis. The study showed that there was 46.3% increase in the income of the beneficiaries while the non-beneficiaries had just 7.4% increase. The study further revealed that there was a positive income difference of N151.27 in favour of the beneficiaries of the project. However, the constraints to deriving a full impact of the programme by the beneficiaries were: lack of commitment by the facilitators, lack of technical know-how, poor transportation system and inadequacy of the equipment provided. The study therefore recommends policies aimed at overhauling the activities of the facilitators, improving the technical skill of the beneficiaries, improving the transportation system and providing the beneficiaries with more equipment.

Key words: income poverty, programmes, rural farmers, constraints

INTRODUCTION

Nigeria is a nation blessed with good climatic and edaphic conditions that can favour agricultural production and enhance the livelihoods of the farming population. However, the country's agricultural system is still subsistence in nature and is operated by rural farmers who on the average live on less than a dollar per day and cultivate less than two hectares, tilling the ground with crude implements (Iheke and Arikaibe, 2012; Egwemi and Odo, 2013).

Nigeria has enormous potentials, immense ambitions, well-articulated policies but paradoxically, still struggles with income poverty, particularly among the rural population (Omotesho et al., 2006; Babatunde et al., 2008). This in turn results in low asset base, low fixed capital investment, crude tools and equipment, labour extensive practice, small farm size, low expenditure on farm inputs and improved technologies, among others, among rural farmers who produce about 70% of the food available in the country. The scenario does not only make the rural farmers resource-poor but also predisposes them to other social challenges such as hunger and malnutrition, increased morbidity and mortality from illness, limited or lack of access to education and other basic services, homelessness and inadequate housing, unsafe environments, social discrimination and

✉Matthew Olaniyi Adewumi, PhD, Department of Agricultural Economics and Farm Management, University of Ilorin, P. M. B 1515, 240003 Ilorin, Kwara StateNigeria, e-mail: matolade@yahoo.co.uk

exclusion, as well as reduced capability to participate in decision-making, social and cultural life (Adewumi et al., 2010; 2012; Olawuyi and Adetunji, 2013).

Over the years, successive governments in Nigeria have attempted to address income poverty in the rural areas of the country through various programmes, initiatives and policies (Muhammad-Lawal et al., 2009; Daneji, 2011). Paul and Samuel (2013) observed that most of these programmes failed to achieve the desired objectives because they were top-down in demand and implementation. In an attempt to avoid the problem of the top-down approach of the previous rural development programmes in the country, the Community-Based Agriculture and Rural Development Project (CBARDP) was initiated in 2007. The programme is a demand-driven one with the goal of creating wealth, employment and reducing income poverty among the rural population. The focus areas were production development, agro-processing machines, prevention of livestock diseases, and livestock upgrading and breeding. Since inception, however, no study has assessed the impact of the project on the income of the farming population in the project areas. This is important, especially in the quest to eradicate income poverty, which is the main goal of the project. Therefore, the main objective of this study was to assess the impact of CBARDP in Kwara State, Nigeria. The specific objectives were to describe the socio-economic characteristics of the beneficiaries and non-beneficiaries of the programme in the study area, determine the income effect of the intervention on the rural farmers and identify the challenges confronting the participants of the project. The outcome of this study will be relevant to policy-makers on how rural development programmes can be enhanced to better the livelihoods of farmers.

METHODOLOGY

The study was carried out in Kwara State, Nigeria. The state was created in May 1967 and is nationally known to be the boundary between northern and south-western Nigeria. It is bounded on the north by the Niger State, south by Ondo and Osun States, in the east by Kogi State, west by Oyo State and has an international border with the Benin Republic along the north-western part of the state. The state is made up of sixteen (16) Local Goverment Areas (LGAs). Agriculture is the main occupation of the people in the state and is being practiced mainly in the rural part of the state. As regards CBARDP, the project was implemented in nine LGAs of the state. These include: Ilorin-South, Ifelodun, Offa, Oke-Ero, Edu, Baruten, Patigi, Isin and Kiama LGAs.

The data used for this study were mainly primary. The sampling frame was composed of a list of rural farmers in the nine LGAs where CBARDP was implemented. A multi-stage sampling technique was used to select the respondents used for the study. The first stage involved a random selection of three (3) participating LGAs. The second stage involved a proportional selection of 60 farmers who benefitted from the project, based on the lists of the beneficiaries across the three LGAs that were selected. This was followed by a random selection of another 60 farmers who were not participants of the project but were within the same LGAs, making a total of 120 respondents. The research instrument used was a structured questionnaire. Data were obtained from the rural farmers on their income before and after the project.

Descriptive statistics and double-difference (DD) estimator were used to analyse the data. The descriptive statistics was used to describe the socio-economic charateristics of the farmers and to examine the costraints to farmers' participation in the programme. The DD estimator, also known as Difference-in-Difference method (Duflo et al., 2004), was used to analyse the impact of the programme on the income of the farmers. It is a quasi-experimental tool that involves the selection of programme beneficiaries and non-beneficiaries who have similar observable characteristics from the same location (Chen et al., 2006; Ike, 2012; Simonyan & Omolehin, 2012; Ike, 2013). This was used to compare changes in outcome measures (i.e., change in income from before to after the project) between project beneficiaries and non-beneficiaries, rather than simply comparing outcome levels at one point in time. The DD estimator is given by:

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

DD = Income difference between the respondents
p = Number of treated group (beneficiaries)
c = Number of individual control group (non-beneficiaries)
Y_{1ia} = Income of beneficiaries after the programme
Y_{1jb} = Income of beneficiaries before the programme
Y_{0ia} = Income of non-beneficiaries after the programme
Y_{ojb} = Income of non-beneficiaries before the programme

The advantage of the DD estimator is that it nets out the effects of any additive factors (whether observable or unobservable) that have fixed impacts on the outcome indicator (such as the income of the farmers), or that reflect common trends affecting project participants and non-participants equally such as changes in prices or weather (Ravallion, 2008; Phillip et al., 2009); hence the adoption of this method for this study. In using the DD method, a positive and significant income difference in income value implies a positive impact of the intervention on the benficiaries, otherwise no impact (Verner and Verner, 2005; Ike, 2014).

RESULTS AND DISCUSSION

Socio-economic characteristics of the farmers

Table 1 shows the socio-economic characteristics of the respondents. The majority of them were males and made up about 77% and 78% of the beneficiaries and non-beneficiaries respectively. Most of the respondents were within the age range of 21–50 years. The majority of both groups of respondents were married. Many of the respondents had a household size of 6–10 persons. Further analysis revealed that the average household size of both groups of respondents was six persons. The majority of the respondents had formal education. As regards tertiary education, however, the beneficiaries accounted for about 23% while the non-beneficiaries were just about 5%. About 78% and 60% of the beneficiaries and non-beneficiaries respectively have been in farming for over ten years. This suggests that agriculture is an age-long venture in the study area.

Income effect of CBARDP on the beneficiaries

Table 2 shows the average monthly income of the farmers by the enterprises which they employed in before

Table 1. Socio-economic characteristics of the respondents
Tabela 1. Społeczno-ekonomiczna charakterystyka respondentów

Socio-economic characteristics Cechy charakterystyczne	Category Kategoria	Beneficiaries (n₁ = 60) Beneficjenci		Non-beneficiaries (n₂ = 60) Niebędący beneficjentami	
		frequency częstotliwość	percentage procent	frequency częstotliwość	percentage procent
1	2	3	4	5	6
Sex Płeć	male – mężczyźni	46	76.6	46	77.6
	female – kobiety	14	23.4	14	23.4
Age (years) Wiek (lata)	21–30	10	16.7	11	18.3
	31–40	17	28.4	20	33.4
	41–50	26	43.3	25	41.6
	51–60	7	11.6	4	6.6
Marital status Stan cywilny	single – wolny	2	3.4	3	5.0
	married – w małżeństwie	49	81.6	53	88.4
	widowed – wdowiec/wdowa	2	3.4	3	5
	divorced – rozwiedziony/ rozwiedziona	4	6.6	0	0
	separated – w separacji	3	5.0	1	1.6
Household size (persons) Wielkość rodziny (liczba osób)	1–5	16	26.7	10	16.7
	6–10	36	60.0	30	50.0
	11–15	8	13.3	20	33.3

Table 1 – cont. / Tabela 1 – cd.

1	2	3	4	5	6
Educational status Wykształcenie	adult – osoba dorosła	2	3.3	9	15.0
	quranic – szkoła koraniczna	3	5.0	7	11.7
	primary – podstawowe	21	35.0	22	36.7
	secondary – średnie	20	33.3	19	31.7
	tertiary – wyższe	14	23.3	3	5.0
Farming experience (years) Doświadczenie w rolnictwie (lata pracy)	1–10	13	21.6	24	40.0
	11–20	25	41.6	17	28.4
	21–30	16	26.6	11	18.4
	31–40	5	8.4	7	11.6
	> 40	1	1.6	1	1.6

Source: field survey.
Źródło: badania terenowe.

and after the project. Considering the focus areas of the project, the beneficiaries realized more income (N36,265.28 before and N62,288.54 after) from production development than all other areas in focus of the project (1 US Dollar = N198.95). This represents about 39.0% and 45.8% of the average income derived from all the units before and after the programme respectively. Similarly, considering the different enterprises, the beneficiaries realized the highest income (N102,000.00 before and N190,000.00 after) from village nursery/ orchard development sector. This accounts for about 70.3% and 76.3% of the total income realized from the production development unit before and after the programme respectively.

Table 3 shows the summary of the change in income of the respondents since the implementation of CBARDP in the study area. The monthly income of all the respondents ranged from N6,230.00 to N195,000.00. On the average the income of the beneficiaries increased from N23,250.05 to N34,003.18, representing about 46%. By contrast, the average income of the non-beneficiaries increased by only 7.41% (from N22,630.13 to N24,307.41). Further analysis of the results revealed that the mean increase in income of the beneficiaries was significantly different from that of non-beneficiaries at p = 0.05. The result of the DD estimates also shows that there was a positive income difference (N151.27)

between the beneficiaries and non-beneficiaries of the project. These results indicate that CBARDP has a positive impact on the income of the beneficiaries.

Challenges faced by the beneficiaries of the project

The challenges faced by the beneficiaries of the project are presented in Table 4. The majority (71.7%) of the beneficiaries complained about lack of relevant technical skills to operate the machines that were provided by the project. Also, about 58% of the beneficiaries lamented poor transportation system. Investigations during the survey revealed that there was poor road network in the study area and this results in high cost of transportation of their commodities. This in turn made it difficult for the beneficiaries to take their commodities to urban markets where they could get a good price for their commodities. A similar finding was reported by Nwaobiala (2014), who noted that poor road network was a problem facing farmers' participation in Community Based Resource Management Programme in Abia and Cross River States, Nigeria.

Other problems encountered by the beneficiaries were the inadequacy of the equipment provided relative to the number of the users and lack of commitment by the facilitators of the project.

Table 2. Monthly income of CBARDP and Non-CBARDP Enterprise Groups
Tabela 2. Dochód miesięczny grup partycypujących w projekcie CBARDP i nieobjętych tym projektem

Field of activity Zakres działalności	Beneficiaries – Beneficjenci				Non-beneficiaries Niebędący beneficjentami			
	before – przed		after – po		before – przed		after – po	
	average income średni dochód (N)	average income by enterprise group średni dochód zależnie od grupy (N)	average income średni dochód (N)	average income by enterprise group średni dochód zależnie od grupy (N)	average income średni dochód (N)	average income by enterprise group średni dochód zależnie od grupy (N)	average income średni dochód (N)	average income by enterprise group średni dochód zależnie od grupy (N)
1	2	3	4	5	6	7	8	9
Production development Rozwój produkcji		36 265.28		62 288.54		33 812.40		35,676.65
Maize doubling Podwojenie plonu kukurydzy	14 200.00		19 300.00		15 616.25		16 523.26	
Village nursery/orchard development Rozwój wiejskich szkółek/sadów	102 000.00		190 000.00		93 000.00		96 450.00	
Improved fish smoking method Ulepszenie metody wędzenia ryb	10 750.00		15 187.50		8 133.33		10 533.33	
Fish feed producing equipment Sprzęt do produkcji pokarmu dla ryb	18 111.11		24 666.67		18 500.00		19 200.00	
Agro-processing machines Maszyny do przetwórstwa rolnego								
Rice dehaulers with prime movers Łuskarki do ryżu	16 750.00		22 500.00		16 909.09		18 636.36	
Maize shellers with prime movers Łuskarki do kukurydzy	16 750.00		23 812.50		16 304.35		18 391.30	
Cassava graters with prime movers, pressers, shifters with engines and trays Tarki do manioku, wyciskacze, wspomagane silnikiem i zaopatrzone w tace	18 111.11		24 833.33		17 666.67		19 444.44	

Table 2 – cont. / Tabela 2 – cd.

1	2	3	4	5	6	7	8	9
Hammer milling and miller machines Maszyny do mielenia, w tym młotkowego	19 583.33		25 500.00		20 062.50		21 062.50	
Melon decorticating machines Maszyny do oczyszczania melonów	23 500.00		28 600.00		24 181.82		26 236.36	
Groundnut decorticating machines Maszyny do oczyszczania orzeszków ziemnych	14 750.00		20 166.67		14 714.29		16 571.43	
Shea butter processing machines Maszyny do przetwarzania masła shea	14 000.00		20 166.67		16 272.73		19 090.91	
Prevention of livestock diseases Zapobieganie chorobom żywego inwentarza		17 634.92		23 654.17		18 015.92		19919.04
Vaccination of small ruminants Szczepienie małych przeżuwaczy	20 750.00		25 750.00		19 909.09		21 477.27	
Livestock upgrading Ulepszanie jakości inwentarza		20 750.00		25 750.00		19 909.09		21,477.27
Ram fattening Tucz baranów	23 600.00		32 000.00		23 625.00		25 625.00	
Sheep up-grading Ulepszanie owiec	14 750.00		19 750.00		14 764.71		14 888.24	
Goat up-grading Ulepszanie kóz	18 400.00		23 600.00		19 884.65		20 923.08	
Chicken up-grading Ulepszanie kurczaków	12 750.00		17 250.00		12 441.18		13 947.06	
Pig breeding Karmienie świń	22 250.00		29 000.00		23 200.00		25 400.00	
		18 350.00		24 320.00		18 783.11		20,156.68

Source: field survey.
Źródło: badania terenowe.

Table 3. Summary of the change in monthly income of the respondents before and after CBARDP
Tabela 3. Podsumowanie zmian miesięcznych dochodów respondentów przed rozpoczęciem projektu CBARDP i po jego zakończeniu

Variables Zmienne	Beneficiaries Beneficjenci		Non-beneficiaries Niebędący beneficjentami	
	before – przed (N)	after – po (N)	before – przed (N)	after – po (N)
Average monthly income Średni dochód miesięczny	23 250.05	34 003.18	22 630.13	24 307.41
Minimum income Dochód minimalny	6 230.00	15 000.00	7 530.00	8 700.00
Maximum income Dochód maksymalny	85 000.00	195 000.00	54 000.00	57 000.00
% change in income before and after the project Procentowa zmiana dochodów przed rozpoczęciem projektu i po jego zakończeniu	46.25%		7.41%	

Source: field survey.
Źródło: badania terenowe.

Table 4. Challenges to participation by the CBARDP beneficiaries
Tabela 4. Ograniczenia uczestnictwa w projekcie CBARDP w opinii beneficjentów

Challenges Wyzwania	No of Respondents* Liczba respondentów*	Percentage Procent
Lack of committment by the facilitators Brak zaangażowania ze strony doradców	16	26.7
Lack of technical know-how Brak technicznego know-how	43	71.7
Poor transportation system Niesprawny system transportowy	35	58.3
Low quality of equipment Niska jakość sprzętu	6	10.0
Inadequacy of equipment provided Brak właściwego sprzętu	25	41.7

*Multiple responses allowed.
Source: field survey.
*Dopuszcza się kilka odpowiedzi.
Źródło: badania terenowe.

CONCLUSION

It can be inferred from this study that CBARDP has had a positive impact on the income of the rural farmers in the study area. Notwithstanding, there are still some problems that need to be addressed, for the farmers to derive the best possible benefits of the project. Based on these findings, therefore, it is recommended that the

implementers of the programme should include training of technical skills in their agenda. Such skills could include how to operate and/or repair the machines. This will help solve the problem of low technical know-how experience of the beneficiaries. Also, the facilitators of the programme should be more committed in discharging their duties to the beneficiaries. In addition, measures that will reduce transportation problems in the study area should be put in place by the government and other development agencies. These could include costruction of new roads, rehabilitation of old roads, and provision of transit vehicles in the study area. This will help reduce or solve the problem of poor transportation that is being faced by the farmers. It will also give the beneficiaries (and other farmers) in the study area the opportunity to take their commodities to urban markets to get good prices for them. Overall, the programme could be extended to other LGAs in the state to achieve a uniform agricultural and rural development in the state.

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WPŁYW WDROŻENIA PROGRAMÓW ROZWOJU OBSZARÓW WIEJSKICH NA DOCHODY: STUDIUM PRZYPADKU NA PODSTAWIE PROJEKTU ROZWOJU ROLNICTWA I OBSZARÓW WIEJSKICH OPARTEGO NA SPOŁECZNOŚCI LOKALNEJ W STANIE KWARA (NIGERIA)

Streszczenie. Rządy wielu krajów na całym świecie realizują programy wsparcia dla rolników. Brak jednak opracowań dotyczących faktycznego wpływu tych programów na wzrost dochodów rolników lub są one bardzo nieliczne. Dotyczy to szczególnie krajów rozwijających się, w tym Nigerii. Dlatego też niniejszy artykuł poświęcono efektom wdrożenia Projektu Rozwoju Rolnictwa i Obszarów Wiejskich (CBARDP) w stanie Kwara w Nigerii. Dane pozyskano od 120 respondentów, w tym 60 beneficjentów i 60 rolników niekorzystających z tego programu. Analizowano je metodami statystyki opisowej i DD (double-difference estimator). Wykazały one wzrost dochodu beneficjentów o 46,3% w porównaniu ze wzrostem o zaledwie 7,4% u rolników z pozostałej grupy. Odnotowano również pozytywny wskaźnik różnicy dochodów beneficjentów na poziomie N151,27. Możliwości omawianego programu nie zostały jednak w pełni wykorzystane ze względu na istniejące ograniczenia: brak zaangażowania osób realizujących projekt, niewystarczającą wiedzę techniczną, słaby system transportu i brak odpowiedniego wyposażenia sprzętowego. Niniejsze opracowanie zawiera zatem zalecenia, które mają na celu zwiększenie zaangażowania osób realizujących projekt, wyposażenie ich w odpowiedni sprzęt oraz usprawnienie systemu transportu.

Słowa kluczowe: wzrost dochodu, programy, rolnicy, ograniczenia