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EFFECTS OF MICRO-CREDIT SCHEME ON AGRICULTURAL PRODUCTION AMONG MEMBERS OF FARMERS DEVELOPMENT UNION, OYO STATE, NIGERIA

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Abstract

This study examined the performance of micro credit schemes on agricultural production in Oyo State with a case study of Farmers' Development Union (FADU). Primary data were collected using a sample size of two hundred farmers disaggregated into one hundred beneficiaries and one hundred non-beneficiaries of (FADU) credit schemes from the identified four zones (Egbeda, Omi-Adio, Lagelu and Akinyele) used for the FADU operation in the state. Frequency distribution, budgetary analysis and ordinary least square multiple regression analysis were used to analyze the data obtained from the survey. The socio-economic characteristics of the respondents revealed that 67% of the respondents were males whereas 33% were females between the ages of 51 and 60 years. The profitability analysis showed that was a positive annual gross margin per hectare of beneficiaries (₦104,136.00) was higher than that of non-beneficiaries (₦70,604.00) at $p < 0.05$, thus implying profitable of food production but higher profitability for FADU beneficiaries. Factors affecting gross margin obtained in food production in the study area include farm size ($p < 0.05$), amount of loan granted ($p < 0.05$), labour ($p < 0.05$) and household size ($p < 0.05$). The study concluded that farmers who patronised FADU have benefitted in the area of provision of steady source of working capital which impacted positively on the their profitability. The study further recommended that FADU needs to take care of the inherent problems associated with loan access and utilization by putting appropriate institutional framework in place that will improve quantum of loan made available to farmers while easing repayment bottlenecks.

Key words: Micro credit, Agricultural production, Oyo State, Nigeria

Introduction

Agriculture is still the most important sector of the Nigerian economy due to the fact that it plays very important role in its developmental process. An honest survey of the current agricultural situation in Nigeria will immediately reveal not only a progressive decline of the contribution of agriculture to the gross domestic product both in relative and absolute terms, but also a stalemate in the country's ability to maintain its food independence. Food production has not kept pace with the country's population growth rate. While the annual rate of population growth is estimated at between 2.5% and 3%, that of food production is between 1 and 1.5% (Opara, 2010). This substantial population growth affects urban and industrial centres more than rural areas because the population of the rural areas, where food is produced, remains essentially stable but has not met the requirements of a burgeoning urban population. In other words, while the number of food producers remains essentially unchanged, the number of consumers is rapidly increasing (Verhey, 2000). Almost the entire output of agriculture comes from small-scale farmers with very little capital and employing techniques that are usually characterized as primitive. According to Olayide and Heady (1982) small holder farmers contribute over 95% to the total food output and own over 90% of the cultivated farmlands. Although a number of constraints to achieving increased

agricultural production exist, such as non-availability of complementary inputs in the right quality quantity, poor conditions of feeder roads and other transport facilities, inadequate technologies and so on, credit is the most limiting factor in agricultural production and productivity in Nigeria (Verheye, 2000). According to Yunus (2000), micro-credit has proven as an effective and popular measure in the ongoing struggle against poverty, enabling those without access to lending institutions to borrow at banks rates to start business. Microcredit is particularly relevant to increasing productivity of rural economy, especially agriculture. It may enable small and marginal farmers to purchase the inputs they need to increase their productivity, as well as financing a range of activities adding value to agricultural output (Nosiru, 2010). A wide range of micro credit schemes has been launched in Nigeria in the last two decades to meet the needs of farmers. Examples of such schemes were the Nigerian Agricultural and Cooperative Bank (NACB), People's Bank of Nigeria (PBN). These organizations had tailored rules and their requirements over the years to suit the context in which they operate. The Central Bank of Nigeria (CBN) introduced the Agricultural Credit Guarantee Scheme in 1977. Despite these governmental programmes and policies aimed at channelling credit to farmers, their credit problems have persisted. Most of these farm credit programmes have been criticized on account of their low recovery rate and inadequate diversified portfolio amongst others (Fakayode *et. al*, 2009). According to Berger (2002), micro finance has proven to be effective and efficient mechanism in poverty reduction all over the world. The 1997 micro credit summit declared as its goals to reach '100 million of world's poorest families, especially women of those families, with credit for self-employment and other financial business services by 2005'. This is a bold objective, since reaching the poorest families through micro finance is still infancy, and most finance institutions currently reach the poor, not the poorest. Fischer (2002) admitted that, for micro credit to have a macro impact on growth and development, we may need it to evolve in more market oriented ways, so that they can tap the capital markets, increase their size and reach and truly make a difference at the aggregate level. Micro finance programme have the potential to transform power relations and empower the poor, both men and women. This is true regardless of the methodology or whether the institution takes a minimalistic financial services approach or holistic or integrated approach. As a consequence, micro finance has become a central component of many donor agencies and national governments, gender, poverty alleviation and community development strategies (Kuhn and Cheston, 2002). According to Snow (2000), micro credit programs become sustainable institution when net benefits to the community exceed total sales. Benefits accrue to the community when net businesses are successful and income increases.

In view of the effects of micro-credit on production and business enterprise, the study therefore examined the socioeconomic characteristics of the respondents, estimated and compared the profitability of loan beneficiaries and non-beneficiaries; determined the factors affecting gross margin respondents; and described the perception of the beneficiaries towards FADU micro-credit programme.

Methodology

The research work was carried out in Oyo State of Nigeria. Oyo State was one of the seven states created in February, 1976 by then military government of Nigeria. The State has 32 local Government Areas and lies between longitudes 6.3⁰ and 4.5⁰ East of Greenwich meridian and latitude 6.58⁰ and 6.2⁰ North of the equator. The state occupies a surface area of 2,495,900 hectares with a total population of about 3,488,789. It shares common boundaries with Osun, Ogun and Kwara States. The State is characterized by two distinct seasons; the

raining season and the dry season. The annual rainfall varies from 1150mm to 2000mm. Due to this climatic condition the state enjoys luxuriant vegetation. Oyo State is one of the areas of FADU, where the density of their members lie in all the State that FADU operates; Oyo, Ogun and Osun are the first category in membership position. The State has 88,260 members with males constitute 18.40% and females, 81.60%. The larger proportion of females is occasioned by their more involvement in processing activities than their male counterpart. The State is made up of 26 zones with each zone having 60 societies. Each society is made up of 2 groups, while each group has 5 members.

Sampling procedure and sample size:

For the purpose of this study, Multistage sampling techniques was used. Four zones namely Egbeda, Omi-Adio, Lagelu and Akinyele were selected purposively out of the 26 working zones to represent North, South, East and West respectively of FADU operating zones in Oyo State. The arable farmers were purposively chosen as the respondents in these zones. This is because the beneficiaries of FADU are involved in diverse productive activities. Non-members of FADU who are also arable farmers were randomly selected in these zones. Two hundred (200) respondents were selected with one hundred being members of FADU that are loan beneficiaries while the remaining hundred were not. Fifty respondents were selected in each zone; twenty five being beneficiaries while the other half were non-beneficiaries. Proportionate random sampling technique was used to select representative FADU beneficiaries.

Data collection and analysis:

Primary data were used in this study. The primary data were collected through a set of questionnaire. These questionnaires were distributed to loan beneficiaries and non-beneficiaries in the selected zones of Oyo State. Descriptive statistics were used to describe the socio-economic characteristics of the respondents. Gross margin of the respondents were calculated by obtaining the gross revenue and variable cost. The gross margin was taken as the surplus remaining, or the difference between total sales and the total variable cost:

$$GM = \text{Gross Revenue} - \text{Total Variable Cost.}$$

Where: *GM*-Gross Margin (Naira)

Total variable costs = Cost of transportation, labour, agrochemical and other inputs.

OLS Multiple regression analysis:

This was used to determine socio-economic variables that most significantly determined the gross margin of the respondents in the study area. The multiple regression was implicitly specified as

$$GM_i = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, e_i)$$

Where

GM: Gross Margin (₦)

X₁ = age (years)

X₂ = educational level (years)

X₃ = household size

X₄ = farm size (Hectare)

- X_5 = amount of loan granted (₦)
 X_6 = membership Status (Dummy variables of 0 for non- beneficiaries and 1 for beneficiaries.)
 X_7 = labour used in mandays
 X_8 = operating expenses (₦)
 X_9 = depreciation cost on fixed input (₦)
 e_i = error term

Four functional forms were fitted and the following criteria were used to select the function that best fit the model; (a) The goodness of fit: This called for magnitude of the coefficient of multiple determination R^2 with special reference to adjusted \bar{R}^2 (b) appropriateness of the sign of the regression coefficient. (c) magnitude of the standard error (SE): the equation with low value is preferred. (d) significance of the t-statistics and F-statistics test. T-test statistics for the test of hypotheses was used to examine the differences in the socio-economic characteristics of beneficiaries and non-beneficiaries and also compared the significance difference in the profitability analysis of beneficiaries and non-beneficiaries of the micro credit programme in the study area.

$$t_{cal} = \frac{\bar{X}_2 - \bar{X}_1}{\sqrt{\frac{S_2^2}{n_2} + \frac{S_1^2}{n_1}}}$$

Where:

- X_1 = Mean of non-beneficiaries respondents
 X_2 = Mean of beneficiaries respondents
 S_1 = Variance of non-beneficiaries respondents
 S_2 = Variance of beneficiaries' respondents
 N_1 = Number of non-beneficiaries respondents
 N_2 = Number of beneficiaries respondents

Results and Discussion

Table 1 reveals that 8% of the respondents were below 40 years while 25% were within the age of 41-50years. Fifty-three percent fell within the age of 51-60 years while 14% were 61-70 years of age. The implication of this result is that majority of the respondents were old and this may affect adoption of new innovation in the long run as most old farmers are usually conservative. Most of the respondents were male which could imply that male were more involved in food production. Majority of the respondents (59%) were married while 24% were divorced, also 2% were single while 15% were widowed. Furthermore, the result showed that 39.5% of the respondents received no formal education, 30.5% had primary education, 28% had secondary education while 2% had adult education. The high percentage of illiteracy is expected to manifest in poor information dissemination among the respondents. Household size distribution indicates that 22.5% had less than 5 persons, 49% of the households had 6-10 persons, 20% had 11-15 persons while 6% had more 15 persons. Further findings showed that in the farm size distribution 11.5% of the farmers cultivated 0.1-0.5 hectare of land, however, 74.5% cultivated 0.6-1.0 hectares of land while 8% cultivated

1.1-1.5 hectares in addition 1.5% cultivated 1.6-2.0 hectares, 2.5% cultivated 2.1- 2.5 hectares and 2% cultivated 2.6-3.0 hectares. The average farm size was 0.82 hectare with a standard deviation of 0.5%. This findings indicated that the respondents were small-scale farmers. The number of years of respondents in the organization revealed that 70% had been there for more than a year whereas 4% had been there within 6-12 months while 26% were there for a year which might indicate that these members might have benefited from the programme for them to have remained there. Classification of loan obtained indicated that 37% obtained short term loan while 55% were intermediate loan and 8% were long term loan. Ability of the respondents to repay the collected loan showed that 77% were able to pay the loan obtained while 23% were not able.

Profitability of loan beneficiaries and non-beneficiaries:

Table 2 showed the result of the estimation of the gross margin of the beneficiaries and non-beneficiaries of FADU micro-credit scheme. The result showed that the mean farm size of respondents, who were beneficiaries of FADU micro credit programme, was 0.89ha, while the non-beneficiaries of the programme cultivated an average 0.41ha. The mean cost of agro-chemicals used by the beneficiaries was ₦ 3,329.00 with standard deviation of ₦2, 567.15 while that of non-beneficiaries was ₦2,344.00 with standard deviation of ₦1,514.61. The mean cost of seeds/cuttings for beneficiaries was ₦7,100.00 with a standard deviation of ₦2,600.66 while that of non-beneficiaries was ₦5,412 with standard deviation of ₦3,614.11. The mean cost of labour for beneficiaries was ₦19,784.00 with a standard deviation of ₦8,027.97 while that of non-beneficiaries was ₦ 11,617.00 with standard deviation of ₦5,765.10. The mean cost of transportation for beneficiaries was ₦ 1,810.00 with a standard deviation of ₦444.58 while that of non-beneficiaries was ₦1,118.00 with standard deviation of ₦561.49. The total variable cost for beneficiaries was ₦32,079 with a standard deviation of ₦27,488.21 while that of non-beneficiaries was ₦20,491.00 with standard deviation of ₦8,214.97. it can be deduced from the forgoing that FADU beneficiaries spend less on farm inputs relatively to their non-beneficiaries counterparts as their average farm size doubles that of the non-beneficiaries while the average cost of non-beneficiaries is almost two-third of FADU beneficiaries. Furthermore, the total revenue for beneficiaries was ₦136,215.00 with a standard deviation of ₦109,941.52 while that of non-beneficiaries was ₦91,095.00 with standard deviation of ₦36,841.47. The gross margin analysis for beneficiaries had a mean of ₦104,136.00 with a standard deviation of ₦ 87,518.90 while that of non-beneficiaries had a mean of ₦70,604.00 with standard deviation of ₦59,461.88. The profitability analysis from the study revealed that the positive average annual gross margin per hectare for both beneficiaries and non-beneficiaries indicated that farmers were able to cover their total operating expenses per hectare, which implied that food production was profitable for both beneficiaries and non-beneficiaries with beneficiaries having almost thrice as much as non-beneficiaries. This might not be unconnected with their loan accessibility from FADU.

Comparison of the Profits of Loan Beneficiaries and Non-Beneficiaries:

This was achieved through hypotheses testing. Results in table 3 show a significant in the farm size and gross margins of loan beneficiaries and non-beneficiaries because the calculated t-statistics (t_{cal}) is greater than the tabulated t-statistics (t_{tab}). Also, difference significant difference exists between the man-day of labour used by the beneficiaries and non-beneficiaries. That is, farmers under FADU hired more labour to work on their farms. No significant difference however exists in the age and household size of loan beneficiaries and non-beneficiaries because the calculated t-statistics (t_{cal}) is less than the tabulated t-statistics (t_{tab}) using t-test equation.

Factors affecting Gross Margin of FADU Farmers:

The econometric analysis of the determinant of the gross margin of the respondents is presented in Table 4. Four functional forms were fitted ordinary least square method, Cobb-Douglas functional form was however, chosen as the lead equation based on the criteria stated earlier. From the table, it showed that 84.3% variation in the gross margin of the respondents was explained by the independent variables. From the results, only educational level of respondents was not a significant factor affecting respondents' gross margin. Also only age of respondents had negative coefficient. All the other variables have positive signs which indicate that a percent increase in the variables will lead to higher percent of gross margin accruable to the respondents.

Assessment of FADU programme by beneficiaries:

Multiple responses were given by the respondents on the assessment of FADU micro-credit programme as presented in table 5. Ninety percent of the respondents (beneficiaries) attested that the programme provided lower interest rate than other informal source of credit, 84% acknowledged FADU as a source of training and technical assistance, 67% agreed that the programme provided steady source of working capital, while 62% believed that FADU were more efficient compared to banks or other sources. Also 26% accepted that there was availability of credit in FADU than in other loan alternatives but 37% confirmed that the size of loans were too small while 25% admitted that the repayment policies of FADU were cumbersome.

Conclusion and Recommendation

This study established the fact that farmers who patronised FADU have benefitted in the area of provision of steady source of working capital which impacted positively on their profitability. Also training and technical assistance received from FADU have played important roles to improved farm production activities in the study area. Therefore, in order to facilitate efficient micro-credit service delivery to farmers, FADU needs to take care of the inherent problems associated with loan access and utilization by putting appropriate institutional framework in place that will improve quantum of loan made available to farmers while easing repayment bottlenecks.

References

- Berger, M. (2002): *Micro finance, an emerging market*. Inter-America Development Bank, 2002
- Fakayode, S. B., M.O. Adewumi, S. A. Salau and O.A. Afolabi (2009): On-lending credit scheme to crop farmers in nigeria: an appraisal of Ekiti State Agricultural Credit Agency (ESACA) Scheme. *Journal of Agriculture, Biotechnology & Ecology*, 2(3), 286-294
- Fischers, S (2002): *Global network for banking innovation in micro finance*. New York, May 16, 2002
- Kuhn, L and Cheston, S. (2002): Empowering women through micro finance. P63-71

- Olayide, S.O. and Heady, E.O. (1982): *Introduction to Agricultural Production Economics*. Ibadan University Press, University of Ibadan. P67-81
- Opara, U.N. (2010). "Personal and socio-economic determinants of agricultural information use by farmers in Agricultural Development Programme (ADP) Zones of Imo State, Nigeria". *Library Philosophy and Practice*. Retrieved on 14th August 2012 from <http://unllib.unl.edu/LPP/opara.htm>
- Snow, D (2000). "Micro credit, an institutional development opportunity". Department of Public management, Suffolk University.
- Verheye, W. (2000). "Local farmers would be able to feed Africa if they were given the chance" *Nature*, p 404-431
- Yunus, M. (2000). *Banker to the poor; micro lending and battle against world poverty*. New York Public Affairs. P 234-238

Table 1: Socioeconomic characteristics of the respondents

Characteristics	Beneficiaries		Non-beneficiaries		Pooled data	
	Frequency	%	Frequency	%	Frequency	%
Age (years)						
31-40	10	10.0	6	6.0	16	8.0
41-50	32	32.0	18	18.0	50	25.0
51-60	47	47.0	59	59.0	106	53.0
61-70	11	11.0	17	17.0	28	14.0
Gender						
Male	65	65.0	69	69.0	134	67.0
Female	35	35.0	31	31.0	66	33.0
Marital Status						
Married	54	54.0	64	64.0	118	59.0
Single	-	-	4	4.0	4	2.0
Divorced	25	25.0	23	23.0	48	24.0
Widowed	21	21.0	9	9.0	30	15.0
Educational level						
No formal education	23	23.0	56	56.0	79	39.5
Primary education	42	42.0	19	19.0	61	30.5
Secondary education	34	34.0	22	22.0	56	28.0
Adult education	1	1.0	3	3.0	4	2.0
Household size						
< 5 members	24	24.0	21	21.0	45	22.5
6-10 members	45	45.0	53	53.0	98	49.0
11-15 members	22	22.0	18	18.0	40	20.0
>15 members	9	9.0	8	8.0	17	6.0
Farm size (ha)						
0.1-0.5	-	-	23	23.0	23	11.5
0.6-1.0	76	76.0	73	73.0	149	74.5
1.1-1.5	12	12.0	6	6.0	16	8.0
1.6-2.0	3	3.0	-	-	3	1.5
2.1-2.5	5	5.0	-	-	5	2.5
2.6-3.0	4	4.0	-	-	4	2.0
Number of years in the Organization						
6-12 months	4	4.0	-	-	4	4.0
1 year	26	26.0	-	-	26	26.0
Above 1 year	70	70.0	-	-	70	70.0
Classification of loan						
Short term	37	37.0	-	-	37	37.0
Medium term	55	55.0	-	-	55	55.0
Long term	8	8.0	-	-	8	8.0
Loan repayment ability						
Ability to repay	77	77.0	-	-	77	77.0
Not able to repay	23	23.0	-	-	23	23.0

Source: field survey, 2010

Table 2: Comparative Gross Margin Analysis of Beneficiaries and Non-Beneficiaries of FADU Micro-Credit schemes in Oyo State.

Variables	Beneficiaries		Non-beneficiaries	
	Mean	STD	Mean	STD
Farm size (ha)	0.89	0.73	0.41	0.27
Cost of Agrochemical	3,329	2,567	2,344	1,814
Cost of Seeds/cuttings or setts	7,160	2,600	5,412	3,614
Cost of labour	19,789	8,027	11,617	5,765
Cost of Transportation	1,801	444	1,118	561
Total variable Cost	32,079	27,485	20,491	8,214
Total revenue	136,215	109,941	91,095	36,841
Gross margin	104,136	87,518	70,604	59,461

STD = Standard deviation

Source: field survey, 2010

Table 3: Result of test of hypotheses

Variables		Mean value	Standard deviation	t _{cal}	t _{tab}
Labour (in manday)	Beneficiaries	241	64.89*	14.23	1.980
	Non-beneficiaries	138	32.14		
Age (in years)	Beneficiaries	57.35	6.01	1.16	1.980
	Non-beneficiaries	59.61	9.42		
Farm size (hectare)	Beneficiaries	0.89	0.73*	6.169	1.980
	Non-beneficiaries	0.41	0.27		
Household size	Beneficiaries	9.4	6.9	1.34	1.980
	Non-beneficiaries	8.2	5.7		
Gross Margin	Beneficiaries	104,136.74	87,518.98*	11.27	1.980
	Non-beneficiaries	70,604.30	59,461.88		

* Significant at 5% Level

Table 4: The econometric analysis of the determinant of the gross margin of the respondents in the study area

Functional forms	Linear	Semi-log	Exponential	Double log
Constant	7.024* (6.114)	5.003* (2.029)	3.530* (5.63)	5.699* (2.114)
Age (X ₁)	-10.803* (6.713)	-5.642 (-2.029)	-3.706* (3.649)	-4.480* (2.952)
Educational level (X ₂)	0.434* (1.976)	0.794* (1.837)	1.721* (1.924)	0.432 (1.146)
Household size(X ₃)	-0.434* (1.976)	3.621* (5.180)	-5.370* (1.120)	0.031* (6.145)
Farm size in ha (X ₄)	0.411* (2.891)	1.264* (2.435)	1.283* (2.346)	1.067* (2.731)
Amount of loan granted (X ₅)	6.461* (1.803)	4.084* (3.936)	4.317* (1.246)	3.034* (2.792)
Membership status (X ₆)	0.346* (2.479)	1.497* (2.892)	1.762* (4.413)	0.847* (2.617)
Labour in man days (X ₇)	0.617* (2.317)	0.423* (3.98)	0.523* (2.598)	0.209* (5.894)
Operating expenses (X ₈)	0.347* (5.258)	0.183* (9.314)	0.126* (6.373)	0.5278* (0.381)
Depreciating cost on fixed Input (X ₉)	0.0074** (1.863)	0.0086* (2.974)	0.0038* (2.685)	0.0094** (1.731)
R ²	0.349	0.815	0.719	0.843
Adjusted R ²	0.438	0.763	0.615	0.784
F-Value	48.460*	30.059*	39.690*	33.180*
Standard Error (SE)	589.413	1.351	0.769	0.421

Figure in parenthesis are the t-value

* Significant at 5% level

** significant at 10% level

Table 5: Perception of FADU programme by the respondents

Perception	Frequency	Percentage*
Lower interest rate than other informal sources of credit	90	90
Steady source of working capital	67	67
Group solution or group dynamics	20	20
Training or technical assistance	84	84
Other financial benefits such as insurance	5	5
Efficiency compared to banks or other sources	62	62
Availability of credit than other loan alternatives	26	26
Smallness in size of loan	37	37
Inconvenience of meeting place	24	24
Repayment policy of FADU	25	25

*= Multiple responses ranked in order of respondents' preference.