Microcredits and Agricultural Productivity in Ogun State, Nigeria

Nosiru, Marcus Omobolanle

Department of Agricultural Production and Management Science, Tai Solarin University of Education, Ijagun, Ijebu Ode, Ogun State, Nigeria

Abstract: Over the last three decades microcredit has gained enormous success in reducing poverty on a global scale. As an efficient financial mechanism, microcredit has the potential to enable various governmental and non-governmental actors to realize the millennium development goals. Based on the field research on microfinance in the rural farming communities in Remo Division of Ogun State, Nigeria, this paper empirically examines and analyses the importance of microcredits in promoting agricultural productivity in the study area. The study reveals that access to microcredits could have prospect in improving the productivity of farmers and contributing to uplifting the livelihoods of disadvantaged rural farming communities. However, the farmers needed to be shrewd at the utilization of credit facilities in order to achieve the goal of output maximization. It was observed from the study that the beneficiaries of microcredits in the study area were more productive than the non-beneficiaries.

Key words: Microcredit % Beneficiaries/non-beneficiaries % Productivity % Rural farming communities

INTRODUCTION

In recent years, microcredit has become a much favoured intervention for poverty alleviation in the developing countries. There is scarcely a poor country and development oriented donor agency (multilateral, bilateral and private) not involved in promotion (in one form or other) of a microfinance programme. Many achievements are claimed about the impact of microfinance programmes and an outside observer cannot but wonder at the range of diversity of the benefits claimed. With an estimated 1.3 billion people of the world living on incomes of less than $1 a day, the governments of the poor countries, especially the Sub-Saharan Africa where the majority of the world’s poor live, face enormous challenge to reduce poverty. The availability of microcredit, broadly defined as the provision of financial services such as savings and credit to the poor household is necessary but not a sufficient condition for rapid poverty reduction.

Nevertheless, microcredit can play an important role. One element of an effective strategy for poverty reduction is to promote the productive use of farm inputs. This can be done by creating opportunities for raising agricultural productivity among small and marginal farmers. Microcredit is particularly relevant to increasing productivity of rural economy, especially agriculture. In an environment where economic growth is occurring, microcredit also has the capacity to transmit the benefits of growth more rapidly and more equitably through the informal sector. It is well documented that for many small scale farmers, lack of access to financial services is a critical constraint to the establishment or expansion of viable agricultural enterprises. Microcredit 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. Access to savings facilities also plays a key part in enabling the poor to smooth their consumption expenditures and in financing investments which improve productivity in agriculture and other economic activities. However, much remains to be done, to integrate microcredit institutions fully into the mainstream of rural financial systems and for commercial banks to recognize their full potential.

Justification of the Study: About 70 percent of Nigerian population lives below the poverty line, majority of who live in the rural sector of the economy. But these poor did not practically have any access to institutional credit, primarily because they are not considered credit worthy. Hence, they could not borrow from the banks or other
financial institutions. The informal money markets, including the traditional moneylenders, provide loans but charge exorbitant rates of interest. Microcredit thus found a space to operate for the poor.

Objectives of the Study:

C To determine the socio-economic factors responsible for the productivity of farmers in the study area.
C To investigate into the productivity differentials between the beneficiaries and non-beneficiaries of microcredits in the study area.
C To determine the differences in access to agricultural resources between the beneficiaries and non-beneficiaries of microcredits in the study area.

Statement of Hypotheses:

C There is no statistically significant difference between the beneficiaries and non-beneficiaries of microcredits with respect to size of farmland.
C There is no statistically significant difference between the beneficiaries and non-beneficiaries of microcredits with respect to labour input.
C There is no statistically significant difference between the beneficiaries and non-beneficiaries of microcredits with respect to herbicides.
C There is no statistically significant difference between the beneficiaries and non-beneficiaries of microcredits with respect to planting materials.
C There is no statistically significant difference between the beneficiaries and non-beneficiaries of microcredits with respect to farm productivity.

Literature Review: The global picture regarding the outreach of microcredit provides the contributions made by the programme. A total of 2186 Microfinance Institutions (MFIs) have been reported to have reached 54.9 million clients with a current loan, 26.8 million of whom were among the poorest when they started with the programme. Out of the 2186 institutions that had reported to the Microcredit Summit Campaign, 1075 are in Asia, 740 are in Africa, 230 are in Latin America and the Caribbean, 59 are in North America, 59 are in Europe and 23 of them are in the Middle East. Out of the total global clients of 54.9 million, 47.9 million are in Asia, 4.5 million are in Africa and 2 million are in Latin America and Caribbean [1]. Sustainable delivery of microfinance services on a large scale in some countries has generated positive developments in microfinance policies and practices among all stakeholders: governments, central banks, microfinance service providers and external funding agencies.

Empirical evidence shows that, among the poor, those participating in microfinance programs who had access to financial services were able to improve their well-being both at the individual and household level much more than those who did not have access to financial services. It was reported by CGAP [2] that Bangladesh Rural Advancement Committee (BRAC) clients increased household expenditures by 28% and assets by 112% after being involved in BRAC’s microcredit program. Furthermore, it was revealed that after more than eight years of borrowing, 57.5% of Grameen borrower households were no longer poor as compared to 18% of non-borrower households. In Lombok, Indonesia, the average income of Bank Rakyat Indonesia (BRI) borrowers increased by 112% and 90% of households graduated out of poverty. In Vietnam, Save the Children clients reduced food deficits from three months to one month. Also, at Kafo Jiginew in Mali, clients who had been with program for as little as one year were significantly less likely to have experienced a period of acute food insecurity; and those that had, had experienced a shorter period [2]. In Bangladesh, a survey of 1,300 clients and non-clients showed that credit clients were significantly more empowered than non-clients in terms of their physical mobility, ownership and control of productive assets (including land), involvement in decision making and awareness of legal and political issues.

A World Bank study has shown evidences of wide-ranging impacts of microcredit on the condition of the borrowers [3]. The study examined programmes of BRAC, Grameen Bank and Bangladesh Rural Development Board (BRDB). The findings revealed that per capita expenditure and household’s net worth have increased due to microcredit among the borrowers of all these programmes. A BRAC research examined the impact of poverty in wider dimension. The results showed that 52% of the BRAC member households were below the poverty line while a higher number (69%) of the comparison households was lying below the line. The overall findings showed that among the BRAC members there have been gradual improvements in the indicators such as wealth, revenue earning assets, value of house structures, the level of cash earned, per capita expenditure on food and total household expenditure [4].
MATERIALS AND METHODS

Study Area: This study was conducted in Remo Division of Ogun state, Nigeria. This area of the state is one of the places that are predominantly rural in nature. The majority of the people living in this locality were involved in farming activities either on a part time or full time basis.

Sampling Techniques: Ninety small-scale plantain farmers were sampled in the study area; these included 31 microcredit beneficiaries 59 non-beneficiaries. The farmers were selected through the use of simple random sampling technique.

Methodology: The data were collected during the 2008/2009 farming year. Structured questionnaire was administered and interview conducted for the selected farmers in order to collect relevant data. Descriptive statistics, the multiple regression analysis, chow test and the test of difference between means of factors were used in meeting the objectives of this study. The socio-economic variables such as age, education, family size, farmland size, farming experience, access to credit facilities, were presented through descriptive statistics. This was also used to compare the average input and output levels of the two farmers’ groups. The multiple regression analysis was fitted to determine the socio-economic characteristics of the farmers responsible for the productivity of the farmers. Also, the Cobb Douglas production function was fitted to assess the factors responsible for plantain production among the selected small scale farmers. The OLS regression model is expressed as follows:

\[ Q = f (X_1, X_2, X_3, X_4, X_5) \]  
\[ Q = \sum_{i=1}^{n} X_i + u \]  
\[ Q = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + u \]  
\[ \ln Q = \ln A + a_1 \ln X_1 + a_2 \ln X_2 + a_3 \ln X_3 + a_4 \ln X_4 \]  
\[ \ln Q = \ln B + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 \]  
\[ \ln Q = \ln C + c_1 \ln X_1 + c_2 \ln X_2 + c_3 \ln X_3 + c_4 \ln X_4 + c_5 \ln X_5 + c_6 \ln X_6 + c_7 D \]  

Where the variables are as follows:
Where Q = output of plantain (bunches); X_1 = age (years); X_2 = sex (dummy: male = 1; female = 0); X_3 = household size; X_4 = level of education (years); X_5 = nature of farming (dummy: full time = 1, otherwise = 0); and X_6 = farming experience (years) and u = error term; \( b_i \)’s = coefficients to be estimated.

The Cobb Douglas production function would be fitted for the microcredit non-beneficiaries as For the microcredit beneficiaries, it would be fitted as

\[ \ln Q = \ln B + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + \text{dummy variable} \]  

Where \( X_1 = \text{land (ha)}; X_2 = \text{labour (mandays)}; X_3 = \text{capital (naira)}; \) and \( X_4 = \text{materials (naira)}. \)

For the combined microcredit beneficiaries and non-beneficiaries (using dummy variable), the model could be stated as

\[ Q = f (X_1, X_2, X_3, X_4, X_5, D) \]  
\[ \ln Q = \ln C + c_1 \ln X_1 + c_2 \ln X_2 + c_3 \ln X_3 + c_4 \ln X_4 + c_5 \ln X_5 + c_6 D \]

Where \( X_1 = \text{amount of credit (naira)}; D = \text{dummy variable for microcredit availability (credit available = 1; otherwise = 0)}. \)

These three equations would be estimated in order to meet the objective (ii) and the Chow test would be used on the three equations to determine the productivity differentials between the microcredit beneficiaries and microcredit non-beneficiaries.

Finally, the t test would be used to test the aforesaid hypotheses; the difference between means of the variables regarding the two farmer groups would be used.

RESULTS AND DISCUSSION

Table 1 shows that the beneficiaries of microcredit schemes had higher age, household size, level of education, labour input, revenue and output level; the non-beneficiaries had higher farming experience, farm size, input of herbicide, planting materials (suckers) and capital. Forty out of ninety selected respondents were females which represents about 44.44% of the respondents, the remaining were male farmers. About 32.5% of the female farmers had access to microcredit facilities and 36% of the selected male farmers had access to the same facilities in the study area. In all, only about 34.4% of the selected farmers had access to microcredit facilities. Table 2 shows that the beneficiaries had higher average productivity than the non-beneficiaries using all the presented indices, except output per labour input. Table 3 shows that majority of the selected farmers obtained their credits through relatives and farmers’ cooperative societies; no one of the selected farmers identified his/her source of credits with commercial or microfinance banks.
Table 1: Socio-economic characteristics of the selected farmers in the study area

<table>
<thead>
<tr>
<th>Socio-economic characteristics</th>
<th>Microcredit beneficiaries (n = 31)</th>
<th>Microcredit non-beneficiaries (n = 59)</th>
<th>Average (n = 90)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>18</td>
<td>32</td>
<td>44.21</td>
</tr>
<tr>
<td>Female</td>
<td>13</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>45.48</td>
<td>43.54</td>
<td>44.21</td>
</tr>
<tr>
<td>Household size</td>
<td>5.48</td>
<td>5.29</td>
<td>5.36</td>
</tr>
<tr>
<td>Education</td>
<td>11.87</td>
<td>9.95</td>
<td>10.61</td>
</tr>
<tr>
<td>Farming experience</td>
<td>15.39</td>
<td>15.68</td>
<td>15.58</td>
</tr>
<tr>
<td>Farm size</td>
<td>1.74</td>
<td>2.19</td>
<td>2.03</td>
</tr>
<tr>
<td>Family labour</td>
<td>265.62</td>
<td>240.70</td>
<td>249.28</td>
</tr>
<tr>
<td>Hired labour</td>
<td>267.36</td>
<td>261.57</td>
<td>263.56</td>
</tr>
<tr>
<td>Labour</td>
<td>532.98</td>
<td>502</td>
<td>512.85</td>
</tr>
<tr>
<td>Herbicide</td>
<td>1.84</td>
<td>2.39</td>
<td>2.20</td>
</tr>
<tr>
<td>Suckers</td>
<td>720.65</td>
<td>907.80</td>
<td>843.33</td>
</tr>
<tr>
<td>Capital</td>
<td>22064.90</td>
<td>75305.08</td>
<td>56966.80</td>
</tr>
<tr>
<td>Credit</td>
<td>39758.06</td>
<td>0.00</td>
<td>13694.44</td>
</tr>
<tr>
<td>Revenue</td>
<td>134903.39</td>
<td>130161.29</td>
<td>133270.00</td>
</tr>
<tr>
<td>Output</td>
<td>182.26</td>
<td>180.51</td>
<td>181.11</td>
</tr>
</tbody>
</table>

*Source: Field Survey, 2009*

Table 2: The indices comparing the productivity measures of microcredit beneficiaries and non-beneficiaries in the study area

<table>
<thead>
<tr>
<th>Productivity indices</th>
<th>Microcredit beneficiaries (n = 31)</th>
<th>Microcredit non-beneficiaries (n = 59)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output per hectare (bunch/ha)</td>
<td>104.75</td>
<td>82.42</td>
</tr>
<tr>
<td>Output per labour (bunch/md)</td>
<td>0.34</td>
<td>0.36</td>
</tr>
<tr>
<td>Output per herbicide (bunch/litre)</td>
<td>99.05</td>
<td>75.36</td>
</tr>
<tr>
<td>Output per equity (bunch/N)</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td>Output per sucker (bunch/sucker)</td>
<td>0.25</td>
<td>0.20</td>
</tr>
</tbody>
</table>

*Source: Field Survey, 2009*

Table 3: The sources of microcredits enjoyed by the beneficiary farmers in the study area

<table>
<thead>
<tr>
<th>Source of credit</th>
<th>Number of beneficiaries</th>
<th>Percentage of beneficiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatives</td>
<td>14</td>
<td>45.16</td>
</tr>
<tr>
<td>Friends</td>
<td>2</td>
<td>6.45</td>
</tr>
<tr>
<td>Farmers' cooperative societies</td>
<td>9</td>
<td>29.03</td>
</tr>
<tr>
<td>Money lenders</td>
<td>6</td>
<td>19.36</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Source: Field Survey, 2009*

**Model 1:** Socio-economic determinants influencing farm productivity in the study area

\[
\ln Q = 72.0621 - 0.2316 \ln X_1 + 24.6510 \ln X_2 + 14.8343 \ln X_3 - 1.6552 \ln X_4 + 84.6490 \ln X_5 + 0.4640 \ln X_6 + (8.789012) (2.603130) (28.516597) (1.967250) \tag{6}
\]

Note: * - 10% level of significance; ** - 1% level of significance.

The most significant socio-economic characteristics of the selected farmers in the study area include nature of farming (significant at 1%) and household size (significant at 10%). The nature of farming is measured using dummy variable: a farmer practicing full time farming is scored 1, otherwise he is scored 0. The result shows that the farmers practicing full time farming tend to be more productive than those practicing part time farming, while the household size also contribute to the level of improved productivity since most household members usually serve as sources of labour. In addition, the result shows other socio-economic variables to include age, sex, level of education and farming experience. The result shows that the younger farmers seemed to be more productive than the older ones. Sex was measured using a dummy variable: a male farmer was scored 1 and a female farmer was scored 0. The result shows that the female farmers are less productive than the male farmers in the study area. The farming experience seemed to contribute to the level of productivity among the selected farmers, while level of education does not seem to be a considerable socio-economic variable for determining the level of productivity in the study area.
Model 2: Production function of the determinants of productivity of the selected microcredit non-beneficiaries in the study area.

\[
\ln Q = 1.2273 + 0.3926\ln X + 0.1399\ln X + 0.2499\ln X + 0.0213\ln X + 0.1653\ln X + 0.114810
\]

\[(7)\]

Note: - 5% level of significance; - 1% level of significance.

The result presented in the above model shows that land size and capital are the most significant variables determining the productivity of the selected farmers in the study area; both have 1% and 5% levels of significance respectively. It could be observed that smaller farmland. Also, higher capital outlay was observed to be a crucial variable among non-beneficiaries of microcredits. Other variables include labour and cost of materials. There seemed to be an over-utilization of labour input among the selected non-beneficiaries and it could be observed that the cost of materials used in cultivation enhances productivity in the study area.

Model 3: Production function of the determinants of productivity of the selected microcredit beneficiaries in the study area.

\[
\ln Q = 1.9628 + 0.2678\ln X + 0.3434\ln X + 0.0213\ln X + 0.0821\ln X
\]

\[(8)\]

Note: - 5% level of significance.

The result presented in the above model shows labour input as the major significant input among the selected beneficiary farmers in the study area; the labour input is significant at 5% level of significance. It could be deduced that increase in labour input would result in improved productivity among the selected microcredit beneficiary farmers. Other variables include land, capital and cost of materials. Any increase in each of these inputs would result into increase in productivity of farm produce.

Model 4: Production function of the determinants of productivity of the selected microcredit beneficiaries and non-beneficiaries in the study area.

\[
\ln Q = 2.6438 + 0.4059\ln X + 0.1019\ln X + 0.0141\ln X + 0.1351\ln X + 0.3778\ln X - 0.0092\ln X
\]

\[(9)\]

Note: - 10% level of significance; - 5% level of significance; - 1% level of significance.

The result presented in the above model shows that land size and capital are the most significant variables determining the productivity of the selected farmers including both beneficiaries and non-beneficiaries of microcredits. It shows that land size and cost of materials are the most significant variables observed among the selected farmers. The land size has 1% level of significance, while cost of materials has 10% level of significance. It could be deduced that an increase in the duo would lead to an improved productivity among the selected farmers in the study area. Moreover, an increase in labour input and capital would also lead to an increase in the production level. In addition, access to credits was measured using dummy variable: any farmer with an access was scored 1, while those with no access were scored 0. It was observed that access to credits seemed to enhance increased productivity in the study area. However, the amount of credit obtained by the farmers in the study area seemed not to contribute positively to level of productivity in the study area. This could be as a result of non-judicious utilization, or diversion of credits obtained to other uses apart from the intended farm enterprises.

The Chow Test: In order to check for any significant difference in the productivity of the two farmer groups, the Chow test statistic is presented as

\[
F = \frac{\text{RSS}_{1} - (\text{RSS}_{1} + \text{RSS}_{2})/k}{\text{RSS}_{2}/n - 2k}
\]

Which follows the F distribution with k and n - 2k degrees of freedom.
The F value was computed to be 42.1192, while the tabulated F value is 2.18; the calculated F value exceeds the critical value in the table 4, hence it could be concluded that there is statistically significant difference in the productivity of both group of farmers. Therefore, it could be concluded that the beneficiaries of microcredits were more productive than the non-beneficiaries in the study area.

The Major Findings from the Study: From the above stated results, it could be observed that:

C The beneficiaries of microcredits were slightly more productive with respect to productive inputs such as land, herbicides, capital and planting materials, than those that had no access to the same facilities in the study area.

C Most of the credits obtained were through relatives and farmers’ cooperative societies; none of the selected farmers had access to credits through commercial or microfinance banks.

C Farmers with larger household size were found to be more productive than those with smaller household size; this was due to the use of household members as sources of labour input.

C Farmers who practise farming activities on full time basis were discovered to be more productive than those practising on part time basis.

C Land size and capital were the most crucial variables among the non-beneficiaries of microcredits, while labour input was found to be the most important variable among the microfinance beneficiaries in the study area. When considering all the farmers altogether, land size and cost of materials were found to be the most important variables.

C Access to microcredit facilities was observed to be important in improving farm production and productivity, although the farmers with access to such facilities seemed not to have made a justifiable utilization of the credits in the study area, otherwise they would have been appreciably more productive than the non-beneficiaries of microcredits.

There were significant differences between the two groups of farmers with respect to size of farmland, labour input, usage of herbicides and obtainance of planting materials; however, there is no significant difference between the two groups of farmers with respect to output.

Recommendations and Conclusion: It could be deduced from the study that the beneficiaries of microcredit facilities were not as productive as expected, even though they had the potentials to be more productive than they currently were at the time of the study. Therefore, in order to enhance the productivity of the beneficiaries of the microcredits as well as that of the non-beneficiaries, the following could be suggested:

C Since it is evident that the non-beneficiary farmers needed capital for crop production, the farmers should make optimal use of chances available within their environments by joining the membership of farmers’ cooperative societies in their localities; this would enable them to have access to credit facilities through such cooperatives. Moreover, individual farmers could take advantage of access to relatives who could afford to give out loan for productive purposes.

C Farmers with capable hands within their households could make use of such as sources of labour input on their farms, this is relatively cheaper.

C Both groups of farmers should put increase in the size of their farmlands into consideration, if they want improvement in their production and productivity.

C It is necessary for the microcredit beneficiaries to consider increasing their input of labour, while the non-beneficiaries should look into reducing their labour input in order to enhance improved farm productivity.

C The farmers in the study area should ensure that they utilize the credit facilities within their reach for the farm production purposes for which they are meant. Cooperative societies and other organized institutions giving out credits should establish a structure which would ascertain a judicious use of credit facilities so as to reduce occurrence of loan default.

C Commercial and microfinance banks should make their services available in form of provision of credit facilities for the small scale farmers, especially through the farmers’ cooperatives; they should also organize a structure which would ascertain careful utilization of such credits and their repayments.

REFERENCES

