Impact of Micro Credit in Alleviating Poverty: An Insight from Rural Rawalpindi, Pakistan

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Abstract

Pakistan's economy is agrarian in nature and character. Agriculture sector is the main source of income for majority of population in the country. Subsistence kind of cultivation merely allows the farmers to use high quality seeds, sufficient fertilizers and improved farm implements because of non-availability of credit. Small farmers are generally characterized as having low income, less saving and low capital formation. Apparently, credit seems to be the dire need of these clusters of farming community. This research endeavour is aimed to analyze the impact of credit on the income and production level of small farmers. A very little of this kind of impact assessment exercise has been made in the past particularly in barani areas. This study was confined to Rawalpindi District. Random sampling technique was used and data were randomly collected from the two different areas of Rawalpindi District. Data analysis was performed in such a way that farmers with-credit and farmers without-credit scenarios were framed to empirically testify the hypothesis through Log Linear kind of multiple regression arrangements. Most of the farmers were fall over in the category of marginalized farmers, who had land holding less than 5 acres. Average per acre production of wheat under with-credit scenario was 27 maunds per acre while per acre production of wheat for without-credit category were 23 maunds per acre. Average numbers of milk animals for with and without credit farmers were same. Average milk production of milk animals for with credit farmers were 2583 kg/annum whereas, for without credit milk production was 2670 kg/annum. It reveals that at least for small farmers, credit was not a profiting activity. But average farm income for with credit farmers from crops were Rs. 32708 while for without credit it was Rs. 30115. Average farm income from livestock for with credit was Rs. 42000 whereas for without credit it was Rs. 44385. All respondents argued that their expenditures were increasing. Most of farmers view that their income were not decreasing. Regression results show that model is best fit for with credit farmers as compared to without credit. R^2 value for wheat with credit was 0.92 as compared to without credit which was 0.88. Similar sort of significance was found for other crops. It was concluded that the credit system should further be improved so that the full benefits could be reaped both in the crop and livestock sectors and mis-utilization of credit by farmers could be minimized. Similarly, the role of Mobile Credit Officers (MCOs) should be redefined according to the changing scenarios.

Key words: Micro-credit, rural rawalpindi, milk production, agriculture crops, poverty alleviation

Introduction

Pakistan's economy is agrarian in nature and character. Agriculture sector is the main source of income for majority of population in the country. It contributes 22 per cent to the Gross Domestic Product (GDP) as compared to 64 per cent in 1948-49. It provides 44.8 per cent of employment to country's labor force. It contributes to 70 percent of the foreign exchange earnings through export of raw materials; semi processed and processed agricultural products. About 67 per cent of total population of the country lives in rural areas and agriculture is main source of their livelihood. (Government of Pakistan, 2007-08).

In Pakistan, majority of the farming community goes for subsistence kind of cultivation. They are not in a position to use high quality seeds, sufficient fertilizers and improved farm implements because of non-availability of credit. Small farmers are generally characterized as having low income, less saving and low capital formation. Unfavorable atmospheric conditions further aggravate the situation thereby rendering the farmer poorer and poorer. Lack of finance is one of the main reasons for low per acre productivity in agriculture. Access to credit for the

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rural poor is typically limited to local moneylenders who can charge in excess of 350 per cent per annum. There are thousands of stories where poor households facing extreme financial distress, have resorted to borrowing money at such exorbitant rates. (Pakistan Micro Finance Network, 2002).

Credit plays an important role in increasing agricultural productivity. Timely availability of credit enables farmers to purchase the required inputs and machinery for carrying out farm operations. Credit has ability to enhance the living standard of poor farmers and can help them come out of their poverty traps. Lack of financial resources widens the gap between the incomes of farmers.

In Pakistan, there are two major sources of agriculture credit: Non-Institutional and institutional credit sources. Non-Institutional sources include friends; neighbors and professional moneylenders. Institutional source includes Zarai Tarqaiti Bank (ZTBL), Co-operative Banks, nationalized and privatized commercial banks. The non- Institutional sources are neither sufficient nor reliable to meet credit needs of farmer making it necessary for the Government to operate in this field and extend credit to farmers through its agencies. (State Bank of Pakistan, 2006).

The government began to emphasize the role of institutional credit to increase production and for transfer of modern technology among small farmers. Credit facilities are an integral part of the process of modernization of agriculture and commercialization of the rural economy. Unless agricultural credit is systematically institutionalized for small landowners and tenants, the dream of agricultural development will not be materialized. Government in the past entrusted many agencies to fulfill their financial requirements. Financing and servicing of small farmers have become the need of hour because of the poor living condition of rural masses.

Currently, banking system is branch based. For small farmers, who are less mobile, it is difficult to visit bank branches located in urban or semi-urban areas. As such, the branch office approach has not always been effective in meeting the needs of the small farmers. The supply of timely credit alone can ensure procurement of appropriate technology resulting in enhanced productivity and income. Farmers with no knowledge of financial practices cannot readily understand and conform to procedures and regulations of lending institutions. They need instruction and supervision. Besides, continuity of services is essential to establishing responsible borrower behavior. Supervised Agricultural Credit Programs still needs to be introduced in its true spirit (Khan, 1991).

Zarai Tarqaiti Bank (ZTBL) is one of the important sources of institutional credit in Pakistan. The main objective of this institution is the transfer and diffusion of modern technology. ZTBL was incorporated as a Public Limited Company on 14th December 2002 through repeal of formal Agricultural Development Bank of Pakistan (ADBP) Ordinance of 1961. A cadre of Functional Mobile Credit Officers (FMCOs) who specialize in the field of dairy, poultry, irrigation, fruits and vegetables, introduced a few years ago, has been further strengthened and expanded. The FMCOs are serving as agents of change as they extend technical guidance to the distantly located farmers all over the country on new adaptive technologies (Brief on ZTBL, 2007).

Agricultural credit shows an increasing trend in the financial reform period, it increased from Rs. 39.7 billion in 1999-2000 to Rs. 58.9 billion in 2002-2003; an average annual increase of 14.1 per cent over the past 4 years. It could be observed that the disbursement of credit to the agricultural sector by the commercial banks has already exceeded the lending by the ZTBL in the first half of Financial Year 2004. The increase in agricultural credit has been accompanied by a greater outreach of the farming community to agricultural credit. The number of borrowers served by commercial banks and ZTBL has risen by almost one quarter in the last 4 years. But even after including the cooperative bank borrowers, the number is hardly one million. As the number of farms in Pakistan is 6.62 million, bank credit covers only 15 per cent of the farming community. The challenge for the commercial banks is, therefore, to extend the coverage to 50 per cent or more than 3 million borrowers in the next 5 years (Hussain, 2003).

Few studies however seem to have been carried out to investigate the specific problems faced by small farmers in Rawalpindi District. Siddiqui (1982) examines the credit as important instrument for prosperity of small farmers and emphasis on the distribution pattern of credit to small farmers. Zuberi (1982) observes the role of credit for balanced economic growth. Umrani (1984) focuses on the availability of agricultural micro-credit to small farmers and constraint faced by small farmers. Idress and Ibrahim(1993) examines farmers' awareness about and access to agricultural credit facilities, utilization of agricultural credit for the adoption of improved farm practices and the extent to which agricultural credit actually meets the farmers' agricultural requirements.

This research endeavour is aimed to analyze impact of credit on the income and production level of small farmers. A very little of this kind of impact assessment exercise has been made in the past particularly in barani areas. This research effort can

explore policy directions for the economic and financial planners for establishing a pro-poor kind of credit enhancement in barani areas. Specific objectives of the paper are given hereunder.

1- To analyze the impact of micro-credit on the farm income in Rawalpindi.

2- To estimate the effect of micro-credit on agricultural production.

3- To draw some policy lessons.

Materials and Methods
Sampling Technique
The study was confined to Rawalpindi District. Simple random sampling technique was used and data were randomly collected from the two different areas of Rawalpindi District. Two villages of East Gujar Khan, Budana and Bewal and one village of Rawalpindi, Sohan was taken. Two types of respondents were selected i.e. farmers with micro-credit and farmers without micro-credit. The farmers included in the study sample were interviewed personally at the farms. Interview schedule was developed in English but the respondents were interviewed in their local language. In order to get correct data each respondent was introduced with objective of the research so that respondents had no suspicion in their minds.

Statistical Technique:
Two important statistical techniques were employed to achieve the objectives of this study.

Proportionate Analysis

Responses of farmers were recorded with percentage method. Percentage was calculated by using the formula:

$$P = f/n \times 100$$

Where: P = Percentage
   f = Absolute frequency
n = Total number of observations

Multiple Regressions Analysis
Data were arranged in such a way that two types of respondents were selected. The first type includes the respondents who took credit while the other category of farmers did not availed credit facility thereby farmers' with-credit and farmers without-credit scenarios were framed. Impact on farm income on both categories were estimated by using the following model.

$$lnY = ln\ \alpha + \beta_1\ lnX_1 + \beta_2\ lnX_2 + \beta_3\ lnX_3$$

Where:
Y = Farm Income α = Intercept
β_1 = Slope of X_1 lnX_1 =Yield per Acre
β_2 = Slope of X_2 lnX_2 = Land Holding
β_3 = Slope of X_3 lnX_3 =Number of milch animals

Results and Discussion
With-Credit and Without-Credit Scenarios: Proportional Analysis
Crop Sector
The use of improved seeds, resistant to pests and diseases and proper seed rate plays an important role in raising productivity. Table 1 shows the comparison of seed rate for the respective crops used by farmers under with-credit and without-credit situations.

Table 1 Average seed rate, Area & Yield under With-Credit &Without-Credit Scenarios (kg/acre)

Crops		With-Credit			Without-Credit		
		Seed Rate (kg/acre)	Area (Acre)	Yield (Maunds)	Seed Rate (kg/acre)	Area (Acre)	Yield (Maunds)
Rabi	Wheat	38.7	3	27	35	3	24
	Gram	25	1	16	25	1	18
	Rabi-fodder	25	1.3	115	25	0.99	110
Kharif	Ground-nut	24	3	12	23	3	11
	Kharif Fodder	26	1.8	108	25	1.3	107

Average yield of wheat for with-credit farmers was 27 maunds per acre, gram 16 maunds per acre, rabi fodder 115 maunds per acre, groundnut 12 maunds per acre, kharif fodder 108 maunds per acre. Production of crops for without-credit cases was 24 maunds per acre for wheat, 18 maunds per acre for gram, 110 maunds per acre for Rabi Fodder, 11 maunds per acre for groundnut, 107 maunds per acre Kharif fodder. Production level is more for farmers with credit because after availing the credit, improved seed was used by farmers. Malik (1996)

stated that access to credit has beneficial effect on farm productivity since it can be used to finance potentially profitable investments that would otherwise be beyond the capacity of a farm household to finance out of its own resources. Our findings are in line with these results. It analysis shows that under with-credit situation, the proportion of per acre yield was fairly high than that of without-credit situation on average.

Livestock Sector
Livestock provides farm power as well as additional

income. Cows and buffalos were the major milk animals in the study area kept by the farming community. Table 2 shows the average number of milk animals kept by small farmer and average milk production in a specific time period. It shows that average of milk animals for both categories of small farmer is same. It was further revealed the average

lactation period per cow was reported to be 6 months and for buffalo was 8 months. It was also found that overall milk production was more for farmers without credit as compared to those without-credit facilities. It can be interpreted that farmers with-credit utilize their credit proportionally more for crops than for livestock.

Table 2 Average number of milk animals and their Milk Production

Status of milk animals	With-Credit		Without-Credit	
	Milk Animals No.	Milk Production Kg/annum	Milk Animals No.	Milk Production Kg/annum
Buffalo	3	1745	3	1750
Cows	2	838	2	920
Total	5	2583	5	2670

Average Farm Income

Income is an indicator of the socio-economic status of a community. The proportion of income derived from farming activity is a good indicator to evaluate the dependence of a family on farming. Table 3

shows the average farm income for both with credit and without credit farmers. It was found that total average farm income is more for farmers with credit as compared to farmers without credit.

Table 3 Crop & Livestock Income under With-Credit & Without-Credit Scenarios

Farm income	With-Credit		Without-Credit	
	Rs./annum	%age	Rs./annum	%age
Crops	32708	22.00	30115	25.00
livestock	42000	28.00	44385	37.00
Any other	73600	50.00	44174	38.00
Total	148308	100.00	118674	100.00

Khattak (2001) stated that due to the awareness of the proper utilization of the loans, the farmers having higher annual income are more eager to get agricultural credits than those do with relatively low income. Majority of loanees' respondents maintained their living only from agriculture while others earned their living from agriculture plus other sources. Nadeem (2001) getting results from his study that 65 percent of respondents are getting sufficient income from farming and remaining are also engaged in business and service. Eighty three (83) percent farmers are thinking about agricultural credit and

majority of them require credit for seed, fertilizer, pesticide and farm machinery. Eighty three percent of farmers got loan for improved farm practices. Seventy seven (77) percent of respondents faced difficulties in getting loan.

Farmers' Interest, Saving, Income and Expenditure

Table 4 shows that most of the farmers are interested in taking loan in future. Both types of farmers, with credit and without credit are interested in taking loan in future It may be conclude that most of farmers are now familiar with the credit system.

Table 4 Farmers Responses under With-Credit and Without-Credit Scenarios

Future interest	With credit				Without credit			
	Future Interest %age	Increase in Saving %age	Decrease In Income %age	Increase In expenditure %age	Future Interest %age	Increase in Saving %age	Decrease in Income %age	Increase in expenditure %age
Yes	92.00	82.00	12.00	100.00	52.00	62.00	36.00	100.00
No	8.00	18.00	88.00	0.00	48.00	38.00	64.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 4 shows the response of farmers about their intention of going for credit, increase in their saving, decrease in income and increase in expenditure both under with-credit and without-credit scenarios. Most of the farmers argued that their saving was increasing under credit scenario. Similar was the case with the response of farmer about his income decrease. About 80 per cent of the farmers argued that their income was not decreasing. It can be argued that production level of farmers was improving and his income was not decreasing. Certainly expenditure was increasing for about all the farmers reflecting the inflationary trends in the country side.

Farmers opinions on Production, Procedure of Installment, Recovery Procedure and Happiness.
Table 5 shows the response of farmer about his per acre production decrease. Most of farmers argued that their per acre production were not decreasing. But some of them also argued that their production depended on rain so it may increase or decrease. It

was further revealed that most of farmers were satisfied with their jobs because of which their level of happiness was increasing. Only those farmers who availed credit, most of them were satisfied with the installment procedure. Installment seemed to be cumbersome. Farmers opine that procedure of installment should be vast so more and more farmers should be attracted by credit facilities of banks.

Table 5 further indicates the farmers' opinion about recovery procedure. Farmers who availed credit seem to be satisfied by recovery procedure. Similarly, farmers who avail credit seem to be more satisfied by loaning procedure as compared to without credit farmers. Gul and Khan (1993) gets the results that Most of the borrowers were not satisfied with the assistance and supervision of the loans. The present security procedure was seen to be cumbersome and costly to most of the borrowers. The study reveals that the repaying ability of the small farmers was better than the large farmers.

Table 5 Farmers Responses under With-Credit and Without-Credit Scenarios

Future interest	With credit				Without credit			
	Decrease in Production %age	Procedure of Installment %age	Recovery Procedure %age	Happiness %age	Decrease in Production %age	Procedure of Installment %age	Recovery Procedure %age	Happiness %age
Yes	76.00	78.00	64.00	98.00	82.00	12.00	6.00	92.00
No	24.00	22.00	36.00	2.00	18.00	88.00	94.00	8.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

With-Credit and Without-Credit Scenarios: Regression Analysis
The regression results were estimated for wheat, gram, ground nut and fodder crops. The results were also compared under with-credit and without-credit scenarios considering their production and yield.

Comparison of Wheat under With-Credit and Without-Credit Scenarios
Various functional forms of multiple regressions were tested and finally Log-linear Regression model was found to be relatively more appropriate in terms of model fitting and speaking power of independent variables for the dependent variable. The estimated regression parameters for the respective crops are explained here.
The estimation of regression parameter of wheat for with-credit farmers is shown in Table 6. The R^2 value of 0.92 means that about 92 percent of the variation in the income was explained by the log of yield per acre of wheat, log of area of wheat and log of number of milk animals. The rest of the 8 percent variation in income might be explained by family size,

environmental changes and customs. Log of per acre production 0.93 means that 1 per cent change in the per acre production bring about 0.93 percent change in the farm income. Similarly 0.19 and 0.29 per cent change in the farm income would be brought by 1 percent change in area of wheat and number of milk animals.
The estimation of regression parameters for farmers without credit is also shown in Table 6. The R^2 of value 0.88 means that 88 per cent variation was explained by log of per acre production of wheat, log of area of wheat and log of number of milk animals. Remaining 12 percent explained by other factors. Log of per acre production 0.87 means that 1 percent change in the per acre production bring the 0.87 per cent change in the farm income. Similarly 0.03 and 0.60 per cent change in the farm income will be brought by 1 percent change in area of wheat and number of milk animals. On an overall basis, the model was fairly significant at 5 percent level of significance.

Table 6 Wheat under With-Credit and Without-Credit Scenarios

Model	With credit			Without credit		
	Standard Coefficient	T-value	P-value	Standard Coefficient	T-value	P-value
Log of per acre production	0.934	17.986	0.00	0.873	12.674	0.00
Log of area	0.191	4.031	0.00	0.030	0.446	0.658
Log of milk animals	0.295	6.228	0.00	0.598	11.281	0.00
R^2	0.92			0.88		
F	195.476		0.00	127.608		0.00

Comparison of Gram under With-Credit and Without-Credit Scenarios

The estimation of regression parameters of gram the category of farmers' with-credit is shown in table 7. The R^2 value of 0.84 reflects that about 84 per cent of the variation in the income was explained by the log of yield per acre of gram, log of area of gram and log of number of milk animals. The rest of the 16 percent variation in income might be explained by family size, environmental changes and customs. Farm income would be changed by 0.78, 0.23 and 0.27 per cent by 1 per cent change in predetermined variable factors. On the other hand, under without-credit scenario, the R^2 of value 0.77 means that 77 per cent variation is explained by log of per acre production of gram, log of area of gram and log of number of milk animals. Remaining 23 per cent are explained by other factors. It reveals that farm income would be changed by 0.85, 0.67 and 0.09 per cent by 1 per cent change in per acre production, area of gram and number of milk animals. The overall fitness of the model was traced at 5 percent level of significance.

Table 7 Gram under With-Credit and Without-Credit Scenarios

Model	With credit			Without credit		
	Standard Coefficient	T-value	P-value	Standard Coefficient	T-value	P-value
Log of per acre production	0.783	8.793	0.00	0.852	7.484	0.00
Log of area	0.229	2.677	0.14	0.674	5.933	0.00
Log of milk animals	0.273	3.067	0.06	0.098	0.919	0.369
R^2	0.84			0.77		
F	39.030		0.00	23.203		0.00

Comparison of Ground-nut under With-Credit and Without-Credit Scenarios

The estimation of regression parameters of gram of farmer with credit is shown in table 8. The R^2 value of 0.95 means that about 95 per cent of the variation in the income was explained by the log of yield per acre of ground-nut, log of area of ground-nut and log of number of milk animals. The rest of the 5 per cent variation in income might be explained by family size, environmental changes and customs. Farm income will be changed by 0.85, 0.24 and 0.16 per cent by 1 percent change in predetermined variable factors. The estimation of regression parameters of farmers without credit is also shown in table 8. The R^2 of value 0.90 means that 90 per cent variation is explained by log of per acre production of ground-nut, log of area of ground-nut and log of number of milk animals. Remaining 10 percent explained by other factors. Farm income will be changed by 0.44, 0.24 and 0.59 per cent by 1 per cent change in per acre production, area of gram and number of milk animals. The overall fitness of the model was also significant at 5 per cent level of significance.

Table 8 Ground-nut under With-Credit and Without-Credit Scenarios

Model	With credit			Without credit		
	Standard Coefficient	T-value	P-value	Standard Coefficient	T-value	P-value
Log of per acre production	0.849	15.354	0.00	0.438	6.508	0.00
Log of area	0.243	4.432	0.00	0.239	3.161	0.05
Log of milk animals	0.158	3.193	0.05	0.598	7.612	0.00
R^2	0.95			0.90		
F	131.080		0.00	73.447		0.00

Comparison of Rabi-fodder under With-Credit and Without-Credit Scenarios

The estimation of regression parameters of Rabi-fodder of farmer with credit is shown in table 9. From statistical viewpoint, the estimated regression line fits the data fairly well. R^2 value of 0.99 means that 99 percent variation in the income was explained by the log of per acre production, log of area of crop and number of milk animals, while rest of 1 percent variation was explained by some missing variables. Log of per acre production 0.98 means that 1 per cent change in the per acre production bring the 0.98 per cent change in the farm income. Similarly 0.07 and 0.05 per cent change in the farm income will be brought by 1 per cent change in area of wheat and number of milk animals. The overall fitness of the model was also significant at 5 per cent level of significance. The estimation of regression parameters of farmers without credit is also shown in table 8. The R^2 value 0.84 means that 84 per cent variation is explained by log of per acre production of gram, log of area of gram and log of number of milk animals. Remaining 16 per cent explained by other factors. Farm income will be changed by 0.74, 0.01 and 0.29 per cent by 1 per cent change in per acre production, area of gram and number of milk animals. The overall fitness of the model was also significant at 5 per cent level of significance.

Table 9 Rabi Fodder under With-Credit and Without-Credit Scenarios

Model	With credit			Without credit		
	Standard Coefficient	T-value	P-value	Standard Coefficient	T-value	P-value
Log of per acre production	0.979	60.254	0.00	0.742	11.096	0.00
Log of area	0.073	4.328	0.00	0.014	0.245	0.807
Log of milk animals	0.056	3.423	0.05	0.290	4.343	0.00
R^2	0.99			0.84		
F	1530.764		0.00	82.251		0.00

Kharif Fodder under With-Credit and Without-Credit Scenarios

The estimation of regression parameter of kharif-fodder of farmer with credit farmer is shown in table 10. The R^2 value of 0.98 means that about 98 per cent of the variation in the income was explained by the log of yield per acre of Kharif-fodder, log of area of Kharif-fodder and log of number of milk animals. The rest of the 2 per cent variation in income might be explained by family size, environmental changes and customs. Log of per acre production 0.95 means that 1 per cent change in the per acre production bring the 0.95 percent change in the farm income. Similarly 0.12 and 0.01 per cent change in the farm income will be brought by 1 per cent change in area of wheat and number of milk animals. For with-out-credit situation, the R^2 of value 0.90 means that 99 per cent variation is explained by log of per acre production of Kharif-fodder, log of area of Kharif-fodder and log of number of milk animals. Remaining 10 per cent explained by other factors. Log of per acre production 0.724 means that 1 percent change in the per acre production bring the 0.72 per cent change in the farm income. Similarly 0.02 and 0.30 per cent change in the farm income would brought by 1 per cent change in area of Kharif-fodder and number of milk animals. The overall fitness of the model was tested at 5 per cent level of significance.

Table 10   Kharif-fodder under With-Credit and Without-Credit Scenarios

Model	With credit			Without credit		
	Standard Coefficient	T-value	P-value	Standard Coefficient	T-value	P-value
Log of per acre production	0.953	53.488	0.00	0.724	11.612	0.00
Log of area	0.119	6.648	0.00	0.020	0.397	0.693
Log of milk animals	0.011	0.631	0.531	0.301	4.723	0.00
R^2	0.98			0.90		
F	1393.781		0.00	131.571		0.00

Conclusion and Policy Derivatives

In this research endeavour, it was empirically established that the average farm income of farmers who avail credit were more due to higher input level, better technical know-how, higher level of farm mechanization etc. Livestock is also important for increasing farm income. Use of modern technology, improved inputs and credit provision may further improve the agricultural productivity of small farmers. Procedure for acquisition and recovery of credit should be made fool proof and easy so that maximum farmers can be attracted towards it. For informal sources of credit, as much as 96 percent of loans were advanced on personal surety (World Bank 1995). It was concluded that the credit system should further be improved so that the full benefits could be reaped both in the crop and livestock sectors and mis-utilization of credit by farmers could be minimized. While giving credit, too much emphasis was given to the needs of low income farmers and less to better off, who were, in fact, more responsible for agricultural modernization while the poor farmers use their credit for consumption (Azid, 1993). Most of the formal loans in Pakistan's rural areas, lends to large landholders far more than to smallholders (Khandker and Faruqee, 1999). Similarly, the role of Mobile Credit Officers (MCOs) should be redefined according to the changing scenarios. Increasing access to financial services still had a role in overcoming rural poverty. There was only the little scope of the subsidized credit for agricultural production in the past (Andrew, 2000). Small-scale farmers in Kenya use a limited credit because of lack of supply and non-satisfactory behavior of institutions. By establishing network of formal credit institutions, improved lending terms and conditions in favor of small farmers can facilitates their access to credit (Atieno, 2001).

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