

Ranking the Factors Affect Microfinance Organizations: A Fuzzy Approach to Rank the Factors

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ABSTRACT

Microfinance organizations offer financial services to relatively poor people to alleviate poverty and boost up country's economy. This sector has got enormous success in achieving its targets in developing countries but still this sector is facing some problems in achieving these targets. This paper has identified and ranked the factors affecting the objectivity of microfinance organizations. Fuzzy set approach is used to rank the expert's subjective opinions regarding the relevant factors. Governance is number one factors amongst all nine factors highlighted in this paper. Other eight factors are ranked as product & services, objectives of microfinance organizations, financing pattern, target market, stakeholders, constraints, product improvement and promotional initiatives, and funding patterns. This paper is helpful for the microfinance organizations, government and other stakeholders of this industry.

KEY WORDS: Microfinance, fuzzy sets, factors, ranking, Pakistan

INTRODUCTION

Microfinance organizations (MFO's) offer financial services and technical assistance to the poor who do not have access to the commercial organizations. Thus, microfinance organization can be an important tool to alleviate poverty [1]. Microfinance organizations are considered to be the weighty provider of loan to the poverty-stricken people and therefore can play a vital role to alleviate poverty and enhancing economic opportunities for the state around the world [2], [3]. The above two statements evince the value of microfinance organization with regard to poverty alleviation and economic development, generally for whole and specifically for developing countries. Notably, importance has been given to this sector by the researcher about the success, objectives, limitation and the impact of these organizations to the poverty alleviation. Microfinance organization with non-commercial orientation are most efficient than the microfinance organization with commercial orientation under production approach [4]. Copestake [5] developed a conceptual frameworks to analyze how Microfinance organizations are valuable for equity goals and economic growth. Unfortunately from the informal sectors of Microfinance organizations majority of the organization were not sustainable and confronted with the problem of self-Sufficiency. Roughly, only one percent of Microfinance organizations were self sustainable and not more than five percent would be self-sustained [6]. Then a dual mission of Microfinance organizations has been started i.e. self sufficiency and poverty alleviation.

Though microfinance's main objective is to alleviate poverty by providing financial services to poor people but in last few years commercialization trend in microfinance has shifted emphasis from social objectives to economic objectives. The main focus of this change is to make microfinance organizations self-sufficient for providing loan to maximum customers (maximum outreach). Microfinance models mostly rely on donor financing which limits the MFIs to reach more poor people that need the financial services and alternative financing model adopt by other commercial banks and capitalist can help microfinance to overcome this problem [7]. Some researchers are against this trend and showing that it is the wrong turn in the field of microfinance and others are stating that it is an innovation in the microfinance field because it enhances the efficiency of MFIs. For example [8] argued that the commercialization in the field of microfinance increased capital cost which is being charge from the customers. This cost of capital increases operational cost of loan which ultimately lower outreach for relatively poor people and increases default rate. This study also indicates that leverage is negatively related to outreach, productivity and the risk. These findings are consistent with the findings of [9] that the commercialization in microfinance industry is a wrong turn because it has violated the original microfinance mission. Hermes, Lensink, & Meesters [10] showed that the commercialization of microfinance organizations is a bad news because it focuses on the efficiency of the microfinance institutions rather than on the main objectives of microfinance organizations i-e focus on the poor. But it does not mean that the efficiency and commercialization are bad for poverty alleviation. For example [11] stated that the performance of commercial / private organizations is better than that of non commercial organizations when portfolio quality is used for measuring performance. The study also showed that the MFIs with commercial orientations are more socially efficient than non-profit organizations. There is a positive impact of commercially-oriented MFOs on social indicators

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like female empowerment and health of children and commercialization of microfinance organizations is not consistent with the well being goals rather it gives a supportive environment. Highly leveraged MFOs perform better, enjoy economy of scales and are more efficient in dealing the risks associated with loans [12].

Pakistan where population growth rate is 2% and 60.20% population is living below the poverty line which was 22.3% in 2006 has shown same trend for example Kashaf Foundation has introduced Kashaf Microfinance Bank and now converted in Finca Microfinance Bank. Similarly National Rural Support Program (NRSP) introduced NRSP Microfinance Bank Limited. Currently there are three main models working in Pakistan i.e. Microfinance Institutions (MFIs), Microfinance Banks (MFBs), and Rural Support programmes. Other than these main models commercial banks, cooperative societies, and some government institutions are also performing microfinance functions. Some MFIs are working with commercial orientation and others are working with non commercial orientation. Both streams are different in terms of governing structure, funding sources, regulatory framework, operations, and products. From the above discussion it is clear that there must be a tradeoff between self sufficiency and poverty alleviation objectives. Microfinance organizations are confronting different challenges while maintaining both objectives. These challenges includes governance issues, funding problems, targeting the right customers, designing product & services and other constraints like illiteracy of the people, lack of banking awareness etc. This study aims to investigate the existing practices of both streams i.e. commercial and non-commercial oriented organizations. Secondly, to rank the identified issues through expert opinion and in the end to make the comparison between commercial and non commercial streams that how they rank individual identified factors.

LITERATURE REVIEW

A review of literature has shown that several studies have been conducted on efficiency, growth, commercialization, outreach, governance, regulatory framework and on sustainability of the microfinance. But a limited research is conducted on identifying and remarking the factors affects objectivity and functioning of microfinance.

Brau & Woller [13] have worked on the existing literature and divide the literature in following six sections:

- i) Self-Sufficiency and Sustainability of Microfinance organizations
- ii) Microfinance organizations Products and services
- iii) Best practices in Microfinance organizations Management
- iv) Targeting to the customers
- v) Addressing the policies of Microfinance
- vi) Impact of Microfinance organizations on clients, households, and the communities in which they lives.

Several researchers focus on the objectivity and operative efficiency of the organizations. Microfinance organizations should efficient enough to generate revenue for the operational and financial cost on the other hand they should also achieve the social objective i.e. to alleviate poverty (Morduch, 2000; Woller *et al.*, 1999). This concept in microfinance studies is known as welfare is its paradigm which states that MFOs should achieve sustainability with poverty alleviation without being self sufficient. An efficient organization should focus on both objectives [13].

Microfinance has given a hope to the poor household to improve their lives by doing their own business but the “win-win” hyperbole promising to alleviate poverty with earning profits has satisfied the MFOs intentions and the fundamental objective of MFOs remain unsubstantiated [3]. Hermes *et al.*, [10] has examined the tradeoff between outreach to the poor and efficiency of Microfinance organizations. They revealed to the efficiency of Microfinance organizations. Microfinance organizations have been faced several challenges which affected their way of running business. Competition amongst the organization has been increased and has changed the way of doing business [15]. Commercialization has been started to compete. Products & services is another area of interest for the researchers because it contributes a lot towards the success of Microfinance organizations. Initially the focus was only on the enterprise lending but now Microfinance organizations are not restricted on the enterprises lending rather they are offering the other financial services like saving and insurance services for the poor households [16]. Growth remains an important element for microfinance organizations and number of researchers has worked on this issue [17], [18].

Regulation and governance are other important issues of microfinance organizations which helps them to achieve its objectives. A considerable work has been conducted on these issues. Regulation is positively related to commercial-oriented organization in terms of maintaining profitability but it reduces the outreach to the women and customers who are costly to reach (Cull *et al.*, 2011). It does not directly enhances the sustainability and outreach of the microfinance organizations but it helps them to collect savings from the individuals which leads better capitalized organization and helps in terms of better sustainability [20]. Structure of corporate governance is an important element which helps the organizations in achieving its objectives. Independence of board significantly related to profitability and outreach whereas board size is negatively related to outreach and positively related to

profitability [12]. Another study revealed the fact that outreach and sustainability of microfinance organizations is depends upon the independence of the board with stakeholders’ representations in the board [21].

Religious is an important factor for the success and failure of any development and open a new face for researchers on microfinance organizations’ study. Currently researchers are focusing on this agenda and working the religious aspects on the development of the microfinance organizations. It has been found that Christian microfinance organizations have lesser funding costs and are efficient in terms of providing secure loan with lesser loan default [22]. According to CIA World Factbook, 2010 it is estimated that about 33.33% (1/3rd) poor in all over the world are Muslims and they are reluctant to adopt traditional interest base financing [23]. It has been found that profit and loss sharing contracts (Islamic) have higher compliance rates than interest based (traditional) [24]. Introducing and designing group-based lending in Islamic microfinance is more effective in terms of reducing transaction cost and maximizing outreach to the poor people [25]. Introducing creating techniques in Islamic microfinance can be more productive in terms of fulfilling individuals’ need and in the development of the country.

Besides the above factors there are other factors like capacity constraints i.e. physical, financial and human resources [26] and risk associated with loan repayment which reduce the effective delivery of the microfinance organizations. Representation of stakeholders in strategic decision making [27] and designing client-focused or market-driven products [28] are other important factors of microfinance organizations. This study has identified, ranked and compare the important factors of microfinance organizations with in the local setting of Pakistan.

METHODOLOGY

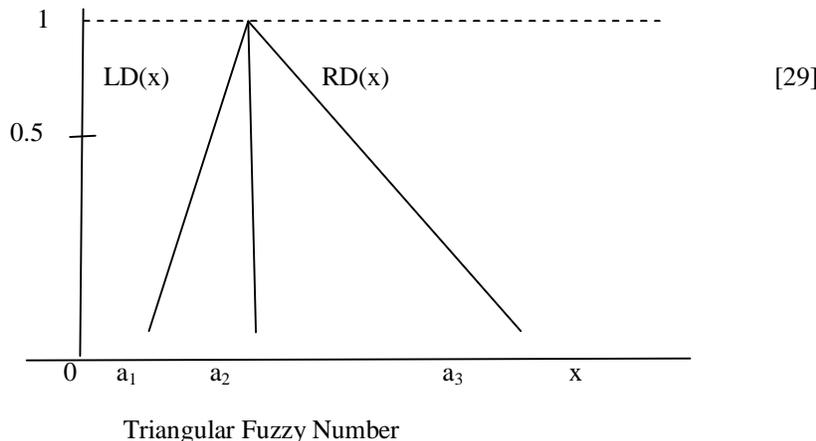
The purpose of this paper is to identify and rank the factors affect functioning of microfinance organizations. At the first phase factors were identified and then experts were asked to give their opinion regarding the importance of relevant factor. The factors which have been identified after interviews are:

- Financing Pattern
- Objectives of Microfinance Organizations
- Funding Pattern
- Stakeholders
- Product and Services
- Target Market
- Product Improvement and Promotional Initiatives
- Governance
- Constraints

Fuzzy aggregation technique is used to rank the identified factors. The objective of this technique is to aggregate the experts opinion of each system by using similarity matrix where each expert gives his subjective assessment in terms of a triangular fuzzy number. A triangular fuzzy number is defined as:

$$u_A(x) = \begin{cases} 0 & \\ \frac{LD(x)}{2} & \\ \frac{RD(x)}{2} & \\ 1 & \end{cases} \quad \text{Where} \quad \begin{cases} x \leq a_1 \\ a_1 \leq x \leq a_2 \\ a_2 \leq x \leq a_3 \\ x \geq a_3 \end{cases}$$

$u_A(x)$



Bárdossy & Disse [30] proposed five aggregation techniques namely crisp weighting, fuzzy weighting minimal fuzzy extensions, convex fuzzy extensions and mixed linear extension method. In fuzzy decision estimation approach, experts give their subjective estimates by an internal value rating of each criterion [31]. Six steps fuzzy approach was used to complete the process as suggested by [32].

Fuzzy decision method includes two phases i.e. aggregation of the rating in the first step and ranking the factors as per the overall rating performance by the experts in the second phase [32]. Aggregation of the experts' opinion was completed by method 2 as suggested by [33] for triangular fuzzy number. In the next phase factors score was computed using following steps:

Step 1

At the first step a_1 , a_2 , and a_3 was calculated and experts' opinion was aggregated using $\alpha = 0.5$ [34]:

$$\bar{A}_\alpha = [(a_2 - a_1) \alpha + a_1, -(a_3 - a_2) \alpha + a_3]$$

Where

a_1 = minimum

a_2 = most likely (average response)

a_3 = maximum

$$\partial_{12} = \frac{LD(\bar{R}_1, \bar{R}_2) + RD(\bar{R}_1, \bar{R}_2)}{\text{Minimum (Maximum - Minimum)}}$$

Step 2

In the next step Normalized Distances are calculated using the following formula:

$$D_{12} = 1 - \partial_{12}$$

Step 3

After calculating normal distances amongst experts similarity matrix was developed with following:

$$\text{Similarity Matrix} = \begin{matrix} E_1 & \begin{bmatrix} 1 & D_{12} & D_{13} \\ & 1 & D_{23} \\ E_3 & & 1 \end{bmatrix} \end{matrix}$$

Step 4

In the next step Average similarities are calculated with the following formula:

$$A(E_1) = \frac{1}{2} (D_{12} + D_{13})$$

Step 5

Then in the next step RSD and \hat{R} is calculated using following:

$$\text{Relative Similarity Degree} = RSD_1 = \frac{AE_1}{\sum_{i=0}^n AE_i}$$

$$\hat{R} = \frac{(a_1 + 2a_2 + a_3)}{4}$$

Step 6

In the last and final step ranking scores for each factor is calculated by using following formula:

$$\bar{R} = RSD_1(a_1 + a_2 + a_3) + RSD_2(a_1 + a_2 + a_3) + RSD_3(a_1 + a_2 + a_3) \dots \dots \dots + RSD_n$$

Illustration

The first factor is the financing pattern of the organizations which affects the functioning of microfinance organizations. This factor contains four dimensions namely target segment, outreach pattern, lending pattern and Islamic microfinance and experts were asked to state your agreement with the importance of factor from very important (1) to very unimportant (5). The calculation of ranking score for this factor is given below:

Step 1 (Aggregation)

Responses of experts were aggregated by taking average of dimensions.

Expert 1 (Represents the responses from MFBs)

$a_1 = 1.3$

$a_2 = 1.8$

$a_3 = 2.4$

$$\bar{A}_{0.5} = [(1.8 - 1.3) 0.5 + 1.8, -(2.4 - 1.8) 0.5 + 2.4]$$

$$\bar{A}_{0.5} = [1.5, 2.1]$$

Expert 2 (Represents the responses from MFIs)

$a_1 = 1.2$

$a_2 = 1.9$

$a_3 = 2.8$

$$\bar{A}_{0.5} = [(1.9 - 1.2) 0.5 + 1.9, -(2.8 - 1.9) 0.5 + 2.8]$$

$$\bar{A}_{0.5} = [1.5, 2.3]$$

$$\partial_{12} = \frac{(1.5-1.5)+(2.3-2.1)}{1.5(2.3-1.5)}$$

$$\partial_{12} = \frac{0.0+0.2}{1.2}$$

$$\partial_{12} = 0.2$$

Step 2 (Normalized Distances)

$$D_{12} = 1 - 0.2$$

$$D_{12} = 0.8$$

Step 3 (Similarity Matrix)

$$SM_{Financing\ Pattern} = \begin{bmatrix} 1 & 0.5 & 0.8 & 0.7 & 0.8 \\ 0.5 & 1 & 0.8 & 0.7 & 0.8 \\ 0.8 & 0.8 & 1 & 0.7 & 0.8 \\ 0.7 & 0.7 & 0.7 & 1 & 0.8 \\ 0.8 & 0.8 & 0.8 & 0.8 & 1 \end{bmatrix}$$

Step 4 (Average Similarities)

$$AE_1 = 1/4 (0.5 + 0.8 + 0.7 + 0.8) = 0.7$$

$$AE_2 = 1/3 (0.5 + 0.8 + 0.7) = 0.77$$

$$AE_3 = 1/2 (0.5 + 0.8) = 0.75$$

$$AE_4 = 0.8$$

$$AE_5 = 0$$

Step 5 (Relative Similarity Degree)

$$RSD_1 = 0.7 / 3.02 = 0.23$$

$$RSD_2 = 0.77 / 3.02 = .25$$

$$RSD_3 = 0.75 / 3.02 = .25$$

$$RSD_4 = 0.8 / 3.02 = .26$$

$$\text{Target Segment} = \widehat{R}_1 = \frac{(1+2(1.85)+2.8)}{4} = 1.875$$

$$\text{Lending Patten} = \widehat{R}_2 = \frac{(1+2(1.45)+2.5)}{4} = 1.60$$

$$\text{Outreach Patten} = \widehat{R}_3 = \frac{(1+2(1.40)+2)}{4} = 1.45$$

$$\text{Islamic Microfinance} = \widehat{R}_4 = \frac{(1.85+2(2.65)+3.15)}{4} = 2.57$$

Step 6 (Ranking Score)

$$\text{Financing Pattern} = \bar{R} = 0.23(1.875) + 0.25(1.60) + .25(1.45) + .26(2.57)$$

$$\text{Financing Pattern} = \bar{R} = 1.86$$

RESULTS AND DISCUSSIONS

In above illustration score for funding pattern is calculated. The same steps were carried out for all the factors. The scores of all the factors are given in table 1 and presented in figure 1.

Governance is number one factor with $\bar{R} = 1.65$ amongst the all nine factors. Better governing system, including both internal & external governance, can play a significant role in maximizing outreach and raising funds. It is observed during interviews that good internal governance helps the organizations in making the internal policies i.e. designing appropriate financing pattern, selecting appropriate product & services for appropriate customers, taking initiatives for product improvement & promotional initiatives. Similarly external governance helps the organizations in achieving the goal by providing protection to investors, mitigating risk for the organizations and by providing guarantees for raising the funds. Product & services is on second number with $\bar{R} = 1.67$. Appropriate design of the product, with respect to its purpose, type and development strategy for a new product, maximizes the outreach to the poor. The third ranked factor is setting up the clear objective of the organization whether it is financial or social. This gives the employees to work in accordance with the organizational objectives. Financing pattern and target market contains equal weight and on number four and five with $\bar{R} = 1.86$. Financing pattern includes to setup target segment, e.g. services sector, agriculture sector, trading sector etc. outreach pattern, lending pattern and Islamic microfinance whereas target market includes targeting the appropriate people and appropriate geographical area. Stakeholders, constraints and product improvement & promotional initiatives are on six, seven & eight number with \bar{R} of 1.90, 1.98 and 2.07 respectively. All the factors scored from 1 (very important) to 2 (important) except funding pattern which is on last number amongst all nine variables. There might be the reason that industry is not utilizing available options to raise funds.

Table 1

Factors	Score
Governance	1.65
Product & Services	1.67
Objectives	1.83
Financing	1.86
Target Market	1.86
Stakeholders	1.90
Constraints	1.98
Product Improvement and Promotional Initiatives	2.07
Funding	2.44

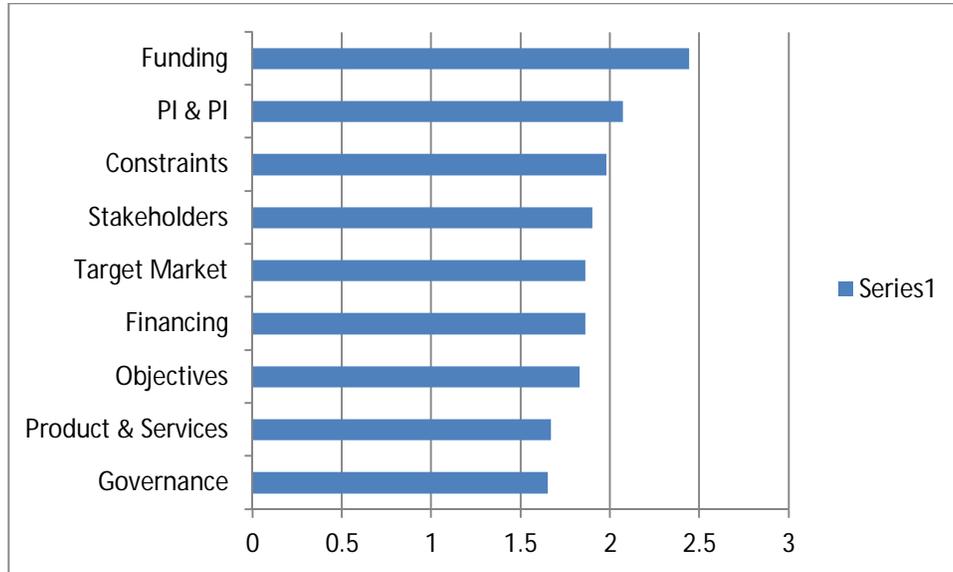


Figure 1

For identifying existing practices of each stream, i.e. commercial and non commercial, separate score was calculated. Scores of each stream is given in table 2 and figure 2 is showing the comparison between these two streams. In all nine factors except funding Microfinance banks score more than the Microfinance institutions, especially there is a comparatively large difference in stakeholder’s importance Microfinance banks give more importance to stakeholders with $\bar{R} = 1.67$ than microfinance institution with $\bar{R} = 2.13$. in funding pattern microfinance institutions score is more than the microfinance banks because microfinance banks usually use commercial funding for raising funds and do not consider the non-commercial sources for raising funds for further verification of this problem separate scores of commercial & non commercial funds are calculated.

Table 2

Factors	MFBS	MFI
Governance	1.54	1.77
Product & Services	1.53	1.81
Objectives	1.79	1.88
Financing	1.81	1.92
Target Market	1.77	1.96
Stakeholders	1.67	2.13
Constraints	1.9	2.06
Product Improvement and Promotional Initiatives	1.89	2.25
Funding	2.46	2.43

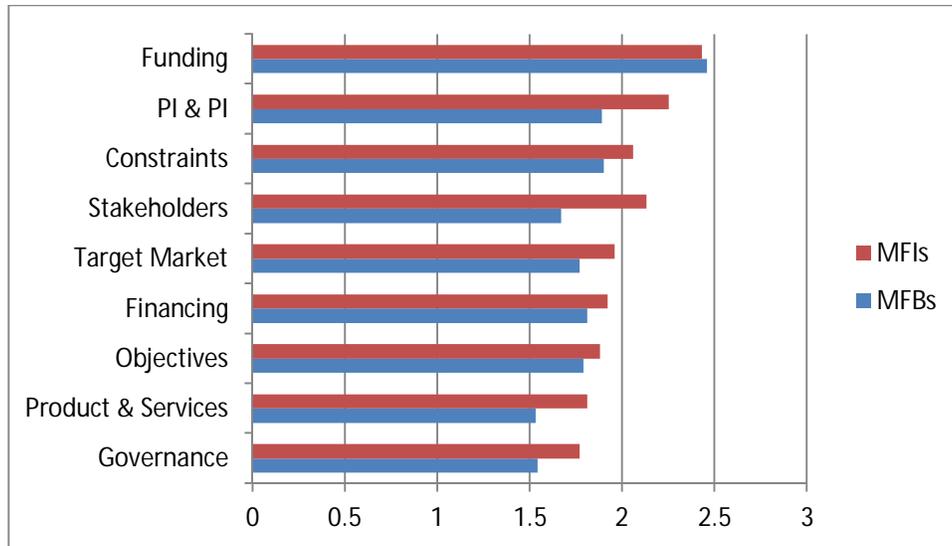


Figure 2

Table 3 showed that Microfinance banks are giving more importance to commercial funding with $\bar{R} = 1.58$ and giving less importance to non commercial funds with $\bar{R} = 3.33$. On the other hand Microfinance institutions almost giving equal importance to both commercial and non commercial sources with $\bar{R} = 2.31$ and 2.56 respectively.

Table 3

Factor	Commercial	Non Commercial
Microfinance Banks	1.58	3.33
Microfinance Institutions	2.31	2.56

Conclusion

Microfinance organizations play key role in alleviating the poverty in developing countries and gained a considerable attention from researchers, academia and government but these organizations are confronting some problems while delivering to the poor people. Problems like governance, funds raising, appropriate policies regarding product improvement and promotional initiatives, product and services design, stakeholders influence, target market, objectives, financing pattern and other constraints are the nine factors highlighted in this study which affect the functioning of microfinance institutions. Governance remains on top from these nine factors with $\bar{R} = 1.65$ and funding pattern is on the last number with $\bar{R} = 2.44$ because governance is a factor which helps in raising funds, designing product & services, setting appropriate target market, and designing appropriate financing pattern, whereas industry is not properly utilizing the resources available for raising funds. Organizations should design appropriate mechanism of selection, composition, characteristics, compensation, and objectives of board of directors and Government should take initiatives to formerly regulate Microfinance Institutions. Funding resources on the other hand are not utilized properly; a proper mechanism of Islamic source of funding i.e. Waqf, Zakat and Sadqat and subsidized funding by the governments can help the organizations in raising the funds.

This paper is helpful for the microfinance organizations, government, regulator, and other stakeholders in making appropriate decision for overcoming the challenges faced by microfinance organizations while alleviating poverty and making self sufficient organizations. But there are some limitations like this study did not cover the rural programs i.e. NRSP, SRSP etc. working in the country, more experts opinion is needed for more reliable results.

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