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Performance Evaluation of MFIs in India-A study measuring technical efficiency of selected MFIs in India

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I. Introduction

The concept of microfinance was introduced in India three decades back and the concept was pioneered in Bangladesh with the efforts made by Prof Mohd Yunus, and followed by it many developing countries have adopted microfinance. Over a period of time with the progress in the sector, many MFIs were evolved and were successful in alleviating poverty by providing financial services to poor, vulnerable and women which led to their upliftment and empowerment. Indian microfinance sector was struck with a crisis in 2010, followed by suicides by microfinance clients in Krishna District, AP and the sector was under supervision since then. In our country, to meet the needs of poor people the operations of MFIs need to be efficient. This study investigates the efficiency of sample MFIs in India by using Data Envelopment Analysis, a non parametric method. The aim is to observe the efficiency trend of sample MFIs and suggest for measures to improve the efficiency.

II. Review of related literature

There were only limited studies worldwide on the efficiency analysis of MFIs. The findings of these some of these studies are presented below.

Guitierrez-Nieto et al (2005) used DEA for efficiency analysis of 30 MFIs in Latin America. The result of the study shows that an NGO and an NBFI were found to be the most efficient among different legal forms of MFIs.

Bassem(2008) in his study on efficiency analysis of 35 MFIs in Mediterranean zone using DEA came out with the result that only 8 out of 35 sample MFIs were efficient and also size is found to have negative impact on efficiency.

Hassan and Sanchez (2009) in their study on efficiency analysis of MFIs in 3 regions viz Latin American countries, Middle East , North African & South Asian countries using DEA found that banks and credit unions were better than non formal MFIs. Inefficiency of MFIs was observed in 3 regions which is mainly due to pure technical efficiency. The South Asian MFIs are found to have better technical efficiency when compared to Latin American and MENA region MFIs.

Haq et al (2009) used DEA based production and intermediation approaches for efficiency analysis of 39 MFIs in Africa, Asia and Latin America. Under production approach NGO MFIs were found to be efficient while bank-MFIs were found to be efficient under intermediation approach.

Ahmad (2011) conducted a study on efficiency analysis of MFIs in Pakistan from 2003-2009 under both CCR and BCC approaches using input and output oriented DEA. The results reveal that under CRS and VRS assumptions, 3 MFIs are found to be on efficiency frontier in the year 2003, while in the year 2009, 4 MFIs are efficient under CRS and 9 MFIs are efficient under VRS.

Bereket Zerai(2012) carried out a study on 19 MFIs in Ethiopia during 2005-2009 using DEA and SFA. The study reveals that the sample MFIs are found to have scale inefficiency. Also under two approaches it was observed that size, sustainability and age (experience)are found to have significant impact on efficiency. Also by applying Malmquist total factor productivity index, they found that the sample MFIs have experienced decline in total factor productivity due to technical efficiency change and also observed that the entire industry has exhibited a decline in technological change which implies that there has been deterioration in the best practicing MFIs.

Objectives of the study

- To measure the technical efficiency of select Microfinance Institutions in India using data envelopment analysis, a non parametric method during the period between 2008-2012.
- To identify the most efficient MFIs using Data envelopment analysis on the basis of efficiency scores obtained.
- To suggest for measures to improve the efficiency of MFIs.

Scope of the study

The study covers 36 MFIs in India which belong to two dominating legal forms viz Non Banking Finance Companies and Non Government Organizations for which continuous data is available for the period 2008-2012 on MIX, USA website. Out of which 27 MFIs belong to NBFC category and 9 MFIs belong to NGO category. The study is confined to measurement of technical efficiency of selected MFIs in India and thereby identifying the efficient MFIs. The sample consists of 21 MFIs which belong to South region, 8 MFIs belong to East region and 7 FIs belong to North &West regions.

III. Methodology of the study

The input oriented DEA is used for measuring the technical efficiency of MFIs. DEA method involves the use of linear programming. The input oriented DEA is used to see which MFIs are successful in terms of their effective utilization of inputs at the given level of outputs. Two models are available; CCR and BCC. CCR model is based on constant returns to scale (CRS) assumption and BCC on variable returns to scale (VRS) assumption. The study used 2 inputs and 3 outputs for the study. The inputs being operating expenses and number of employees while the outputs are gross loan portfolio, number of loans outstanding and interest& fee income. The DEA software developed by Tim Coelli is used for obtaining efficiency scores.

Limitations of the study

The study is limited to 36 MFIs in India for which continuous data from 2008-2012 is available on the MIX, USA. Also the technical efficiency analysis is carried out by taking two inputs and three outputs .Hence the study cannot be generalized as the study may reveal different results with different set of inputs and outputs.

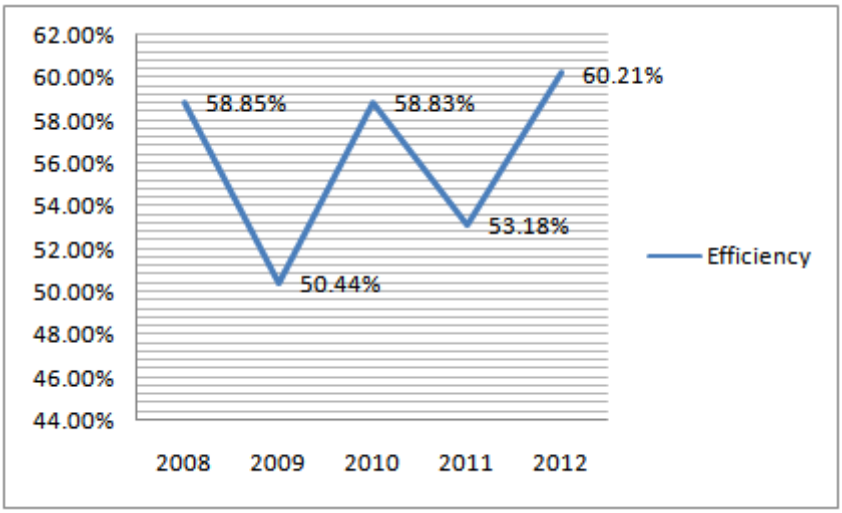
Table1.1: DEA (INPUT ORIENTED) EFFICIENCY SCORES DURING 2008-2012

SNO	FIRM	Region	2008	2009	2010	2011	2012	AVERAGE
1	AROHAN	East	0.905	0.224	0.943	0.173	0.469	0.5428
2	BANDHAN	East	0.149	0.119	0.197	0.269	0.397	0.2262
3	BASIX	South	0.068	0.141	0.659	0.338	0.247	0.2906
4	BJS	East	1	1	1	0.491	0.774	0.853
5	CASHPOR MC	North &West	0.234	0.355	0.568	0.266	0.463	0.3772
6	EQUITAS	South	0.1	0.202	0.15	0.235	1	0.3374
7	MAHASEMAM	South	0.995	1	0.638	0.291	1	0.7848
8	MMFL	South	0.914	0.589	1	0.479	0.297	0.6558
9	SARALA	East	0.481	1	0.591	1	1	0.8144
10	SKDRDP	South	0.051	0.13	0.267	0.084	0.175	0.1414
11	VFS	East	0.43	0.348	0.129	0.73	0.698	0.467
12	SANGAMITRA	South	0.756	0.735	0.475	0.379	0.527	0.5744
13	AML	South	0.669	0.15	0.52	0.116	0.949	0.4808
14	ASIRVAD	South	1	1	0.399	0.756	0.564	0.7438
15	BSS	South	0.222	0.408	0.222	0.481	0.678	0.4022
16	GRAMA VIDIYAL	South	0.265	0.157	1	0.282	0.437	0.4282
17	RGVN	East	0.946	0.282	0.539	1	0.459	0.6452
18	SONATA	North &West	0.643	0.374	0.638	0.368	0.483	0.5012
19	SWADHAAR	North &West	0.443	1	0.774	1	1	0.8434
20	GFSPL	South	0.15	0.079	0.574	0.168	0.229	0.24
21	NEED	North &West	0.82	0.839	0.379	1	0.48	0.7036
22	ADHIKAR	East	1	1	0.89	0.892	1	0.9564
23	ESAF	South	0.67	0.55	0.223	0.28	0.28	0.4006
24	FFSL	South	0.435	0.157	0.343	1	0.402	0.4674
25	IDF FINANCE	South	1	0.908	1	1	0.74	0.9296
26	SARVODAYA	South	0.315	1	0.656	1	0.782	0.7506
27	SCNL	North &West	0.955	0.539	0.349	0.357	0.267	0.4934
28	SMILE	South	0.474	0.356	0.439	0.2	0.311	0.356
29	SPANDANA	South	0.175	0.252	0.182	0.064	0.133	0.1612
30	TRIDENT	South	0.792	0.422	1	0.888	0.442	0.7088
31	UJJIVAN	South	0.173	0.178	0.287	0.28	0.726	0.3288
32	**UFSPL**	**North &West**	**1**	**1**	**1**	**1**	**1**	**1**
33	SAHARA UTSARGA	North &West	0.946	0.853	0.782	0.298	0.345	0.6448
34	WSE	South	0.409	0.243	0.918	1	1	0.714
35	ASA INDIA	East	0.601	0.17	0.448	0.371	1	0.518
36	SAMASTA	South	1	0.399	1	0.612	0.924	0.787
MEAN			**0.5885**	**0.504417**	**0.588306**	**0.531889**	**0.602167**	**0.563056**

From the efficiency scores obtained, for the year 2008, six MFI were found to be operating at the best practice frontier or are considered to be efficient having efficiency score (=1) i.e. 100%. These are BJS, Asirvad, Adhikar, IDF Financial Services, UFSPL and Samasta. During 2009, eight MFIs have recorded 100%

efficiency. These are BJS, Mahasemam, Sarala, Asirvad, Swadhaar, Adhikar,Sarvodaya and UFSPL. During 2010, 7 MFIs; BJS, MMFL, Gramavidiyal, IDF Finance, Trident, UFSPL and Samasta have recorded 100% efficiency. In 2011, 9 MFIs; Sarala, RGVN, Swadhaar, NEED, FFSL, IDF Financial services, Sarvodaya, UFSPL and WSE have achieved 100% efficiency. In the last year of analysis i.e. in 2012, 8 MFIs; Equitas, Mahasemam, Sarala, Swadhaar, Adhikar, UFSPL, WSE and ASA India have achieved 100% efficiency. The overall average efficiency was found to be 56.30% which means that still there is a chance to reduce the inputs by 43.70% at the given outputs to achieve 100% efficiency. UFSPL was found to be efficient during the entire period of study with 100% efficiency, followed by Adhikar, IDF Financial services, BJS, Swadhaar and Sarala with efficiency scores of 95.6%, 92.9%, 85.3%, 84.3% and 81.44% respectively. The least efficient MFIs are SKDRDP, Spandanaa, Bandhan, GFSPL and BASIX with efficiency scores of 14.14%, 16.12%, 22.6%, 24% and 29.06% respectively. Only 13 MFIs out of 36MFIs have experienced efficiency of more than 70%.

Efficiency trend of MFIs under CCR model (input oriented)



From the fig it was evident that the sample MFIs have experienced a fluctuating trend of efficiency during 2008-2012.

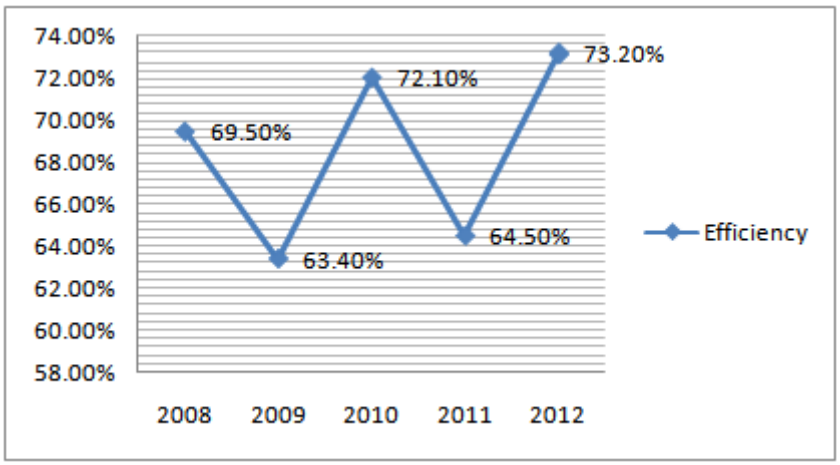
Table1.2: Efficiency of MFIs under BCC Model (VRSTE)-Input oriented

SNO	MFI		2008	2009	2010	2011	2012	AVERAGE
1	AROHAN	East	1	0.456	0.959	0.466	0.622	0.7006
2	BANDHAN	East	0.336	0.128	0.245	1	0.402	0.4222
3	BASIX	South	0.082	0.168	1	1	0.327	0.5154
4	BJS	East	1	1	1	0.512	1	0.9024
5	CASHPOR MC	North &West	0.267	1	1	0.268	0.645	0.636
6	EQUITAS	South	0.114	0.202	0.171	0.259	1	0.3492
7	MAHASEMAM	South	1	1	1	0.531	1	0.9062
8	MMFL	South	1	1	1	0.483	0.416	0.7798
9	SARALA	East	0.49	1	0.673	1	1	0.8326
10	SKDRDP	South	0.07	0.15	0.325	0.092	0.296	0.1866
11	VFS	East	1	0.42	0.471	1	1	0.7782
12	SANGAMITRA	South	1	0.866	0.591	0.794	0.82	0.8142
13	AML	South	0.979	0.178	0.857	0.168	1	0.6364
14	ASIRVAD	South	1	1	0.427	1	0.591	0.8036
15	BSS	South	0.304	0.506	0.342	0.487	0.96	0.5198
16	GRAMA VIDIYAL	South	0.287	0.164	1	0.322	0.583	0.4712
17	RGVN	East	0.975	0.709	0.741	1	0.593	0.8036
18	SONATA	North &West	0.75	0.742	0.653	0.371	0.539	0.611
19	SWADHAAR	North &West	0.458	1	0.838	1	1	0.8592
20	GFSPL	South	0.182	0.176	0.598	0.168	0.385	0.3018
21	NEED	North &West	1	1	1	1	0.807	0.9614
22	**ADHIKAR**	**East**	**1**	**1**	**1**	**1**	**1**	**1**
23	ESAF	South	1	0.566	0.249	0.319	0.324	0.4916
24	FFSL	South	0.769	0.239	1	1	0.468	0.6952
25	IDF FINANCE	South	1	1	1	1	0.754	0.9508
26	SARVODAYA	South	0.335	1	1	1	1	0.867
27	SCNL	North &West	1	1	0.35	0.412	0.475	0.6474
28	SMILE	South	0.476	0.407	0.498	0.207	0.38	0.3936
29	SPANDANA	South	0.182	1	0.185	0.081	0.244	0.3384

30	TRIDENT	South	0.806	0.45	1	0.917	0.736	0.7818
31	UJJIVAN	South	0.192	0.198	0.303	0.69	1	0.4766
32	**UFSPL**	**North &West**	**1**	**1**	**1**	**1**	**1**	**1**
33	SAHARA UTSARGA	North &West	1	1	1	0.438	1	0.8876
34	WSE	South	1	0.254	1	1	1	0.8508
35	ASA INDIA	East	1	0.461	0.487	0.404	1	0.6704
36	SAMASTA	South	1	0.399	1	0.837	1	0.8472
MEAN			**0.695944**	**0.634417**	**0.721194**	**0.645167**	**0.732417**	**0.685828**

From the efficiency scores obtained, for the year 2008, seventeen MFIs were found to be operating at the best practice frontier or are considered to be efficient having efficiency score (=1) i.e. 100%. These are Arohan, BJS, Asirvad, Adhikar, ASA India, IDF Financial Services, Mahasemam, MMFL, VFS, Sanghamitra, NEED, ESAF, SCNL, SaharaUtsarga, Samasta ,UFSPL andWSE. During 2009, 15 MFIs have recorded 100% efficiency. These are BJS, Cashpor MC, MMFL, Mahasemam, Sarala, Asirvad, Swadhaar, NEED, Adhikar, IDF Finance, Sarvodaya, SCNL, Spandana, Sahara Utsarga and UFSPL. During 2010, 16 MFIs; BASIX, BJS, Cashpor MC, Mahasemam, MMFL, Gramavidiyal, NEED, Adhikar,IDF Finance,FFSL, Sarvodaya Sahara Utsarga, Samasta, Trident, UFSPL and WSE have recorded 100% efficiency. In 2011, 14 MFIs; Bandhan, BASIX, Asirvad, Sarala, RGVN, Swadhaar, NEED, FFSL, IDF Financial services, Sarvodaya, Swadhaar, UFSPL, VFS and WSE have achieved 100% efficiency. In the last year of analysis i.e. in 2012, 15 MFIs; BJS, Sarala, Equitas, Mahasemam, Sahara Utsarga, Swadhaar, Sarvodaya, Adhikar, AML, VFS, Ujjivan, UFSPL, WSE, ASA India and Samasta have achieved 100% efficiency. The overall average efficiency is found to be 68.58% which means that still there is a chance to reduce the inputs by 31.42% at the given outputs to achieve 100% efficiency. Adhikar & UFSPL were found to be efficient during the entire period of study with 100% efficiency, followed by NEED, IDF Financial services, Mahasemam, BJS and Sahara Utsarga with efficiency scores of 96.1%, 95.08%, 90.62%, 90.24% and 88.76% respectively. The least efficient MFIs are SKDRDP, GFSPL, Spandana, Equitas, and SMILE with efficiency scores of 18.66%, 30.18%, 33.84%, 34.92% and 39.36% respectively. Only 19 MFIs out of 36MFIs have experienced efficiency of more than 70%.

Efficiency trend of MFIs under BCC model (DEA input oriented)



From the fig it was evident that the sample MFIs have experienced a fluctuating trend of efficiency during 2008-2012.

Table1.3: Scale Efficiency of MFIs under Input oriented model for 2008-2012

SNO	MFI	2008	2009	2010	2011	2012	AVERAGE
1	AROHAN	0.905	0.492	0.983	0.371	0.755	0.7012
2	BANDHAN	0.443	0.927	0.806	0.269	0.986	0.6862
3	BASIX	0.825	0.839	0.659	0.338	0.754	0.683
4	BJS	1	1	1	0.96	0.774	0.9468
5	CASHPOR MC	0.876	0.355	0.568	0.992	0.717	0.7016
6	EQUITAS	0.875	0.998	0.876	0.907	1	0.9312
7	MAHASEMAM	0.995	1	0.638	0.549	1	0.8364
8	MMFL	0.914	0.589	1	0.992	0.715	0.842
9	SARALA	0.983	1	0.878	1	1	0.9722
10	SKDRDP	0.72	0.862	0.822	0.911	0.592	0.7814
11	VFS	0.43	0.829	0.274	0.73	0.698	0.5922
12	SANGAMIT	0.756	0.848	0.804	0.477	0.643	0.7056
13	AML	0.683	0.839	0.606	0.692	0.949	0.7538

14	ASIRVAD	1	1	0.935	0.756	0.953	0.9288
15	BSS	0.731	0.806	0.649	0.989	0.706	0.7762
16	GRAMA VIDIYAL	0.922	0.954	1	0.878	0.75	0.9008
17	RGVN	0.97	0.397	0.726	1	0.773	0.7732
18	SONATA	0.857	0.504	0.977	0.991	0.895	0.8448
19	SWADHAAR	0.966	1	0.923	1	1	0.9778
20	GFSPL	0.822	0.452	0.961	0.999	0.595	0.7658
21	NEED	0.82	0.839	0.379	1	0.594	0.7264
22	**ADHIKAR**	**1**	**1**	**0.89**	**0.892**	**1**	**0.9564**
23	ESAF	0.67	0.972	0.895	0.878	0.866	0.8562
24	FFSL	0.565	0.656	0.343	1	0.86	0.6848
25	IDF FINANCE	1	0.908	1	1	0.982	0.978
26	SARVODAYA	0.94	1	0.656	1	0.782	0.8756
27	SCNLs	0.955	0.539	0.997	0.865	0.563	0.7838
28	SMILE	0.996	0.876	0.882	0.966	0.819	0.9078
29	SPANDANA	0.959	0.252	0.983	0.797	0.546	0.7074
30	TRIDENT	0.983	0.937	1	0.969	0.601	0.898
31	UJJIVAN	0.9	0.896	0.948	0.406	0.726	0.7752
32	**UFSPL**	**1**	**1**	**1**	**1**	**1**	**1**
33	SAHARA UTSARGA	0.946	0.853	0.782	0.681	0.345	0.7214
34	WSE	0.409	0.957	0.918	1	1	0.8568
35	ASA INDIA	0.601	0.369	0.919	0.919	1	0.7616
36	SAMASTA	1	0.999	1	0.732	0.924	0.931
	MEAN	**0.844917**	**0.798444**	**0.824361**	**0.830722**	**0.80175**	**0.820039**

From the efficiency scores obtained, for the year 2008, 6 MFIs were found to be efficient having efficiency score(=1) i.e. 100%. These are BJS, Asirvad, Adhikar, IDF Financial Services, UFSPL and Samasta. During 2009, 8 MFIs have recorded 100% efficiency. These are BJS, Mahasemam, Sarala, Asirvad, Swadhaar, Adhikar,Sarvodaya and UFSPL. During 2010, 7 MFIs; BJS, MMFL, Gramavidiyal, IDF Finance, Trident, UFSPL and Samasta have recorded 100% efficiency. In 2011, 9 MFIs; Sarala, RGVN, Swadhaar, NEED, FFSL, IDF Financial services, Sarvodaya, UFSPL and WSE have achieved 100% efficiency. In the last year of analysis i.e. in 2012, 8 MFIs; Equitas, Mahasemam, Sarala, Swadhaar, Adhikar, UFSPL, WSE, ASA India have achieved 100% efficiency. The overall average scale efficiency was found to be 82% which means that still there is a chance to reduce the inputs by 18% at the given outputs to achieve 100% efficiency. UFSPL was found to be efficient during the entire period of study with 100% efficiency, followed by IDF Financial services, Swadhaar , Sarala , Adhikar and BJS with efficiency scores of 97.8%, 97.78%, 97.22%, 95.64% and 94.6% respectively. The least efficient MFIs were VFS, BASIX, FFSL, Bandhan and Arohan with efficiency scores of 59.22%, 68.3%, 68.4%, 68.6% and 70.12% respectively. 31 MFIs out of 36MFIs have experienced efficiency of more than 70%.Only 11 MFIs (30.5%) MFIs have recorded scale efficiency greater than 90%.

Table1.4: Top 10 MFIs according to CCR and BCC approaches under Input oriented DEA model

S.No	CRSTE	VRSTE	SCALE
1	**Ufspl**	**Adhikar, Ufspl**	**Ufspl**
2	Adhikar	Need	**IDF finance**
3	**IDF Finance**	**IDFFinance**	Swadhar
4	BJS	Mahasemam	Sarala
5	Swadhar	BJS	Adhikar
6	Sarala	Sahara	BJS
7	Samasta	Sarvodaya	Equitas
8	Mahasemam	Swadhaar	Samasta
9	Sarvodaya	Wse	Asirvad
10	Asirvad	Samasta	Smile

IV. Findings

- Under CCR and BCC approaches, UFSPL was found to be the most efficient MFI with 100% efficiency.
- UFSPL was found to have 100% scale efficiency, which implies that UFSPL was successful in optimum utilization of inputs. UFSPL belongs to North-West Region.
- Under CCR approach(Constant Returns to Scale assumption), the overall average efficiency was found to be 56.30% which implies that still there is a chance for the sample MFIs to reduce their inputs by 43.70% to achieve 100% efficiency.
- Under BCC approach(Variable returns to scale assumption), the overall average efficiency was found to be 68.58% which implies that still there is a chance for the sample MFIs to reduce their inputs by 31.42% to achieve 100% efficiency.

- The overall average scale efficiency was found to be 82% which implies that still there is a chance to improve their scale efficiency by 18% so as to improve the scale efficiency.
- Under Variable returns to scale (VRS) assumption, it was observed that 19 MFIs are having greater than 70% efficiency and remaining 17 MFIs were found to have less than 70% efficiency.
- It was observed that there was a fluctuating trend of efficiency under both CRS and VRS assumptions.
- There was decline in efficiency after 2010, followed by crisis in the sector due to suicides by microfinance clients in Krishna district, followed by reforms in the sector and later on the sector got revived.
- It was observed that during the period of study, South region MFIs on an average have shown less efficiency when compared to East and North& West region MFIs which implies that there is a greater negative impact of crisis on South region MFIs.

V. Suggestions

- The MFIs should strive to improve the efficiency by effectively utilizing the inputs
- As UFSPL was found to have 100% efficiency under both approaches (CCR &BCC), also 100% scale efficiency, the remaining MFIs can take it as a benchmark in terms of its best practices for improving their efficiency.
- The MFIs should strive to achieve efficiency by reducing operating expenses as well as by maintaining adequate number of staff.
- The existing staff should be properly trained to carry out the microfinance operations, this reduces the problem of overstaffing and also reduces expenditure towards staff.
- Increase in outreach leads to economies of scale, there by operating expenses can be reduced. Hence along with microcredit the MFIs have to provide Microfinance Plus services which include insurance, health related services and so on so as to increase outreach and which ultimately lead to reducing operating expenses.
- Offering technology driven services reduces cost of operations, hence innovative technology must be used so as to increase efficiency.
- The South region MFIs should focus more on their operations and try to overcome their deficiencies by following the best practicing MFIs in the industry.

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