

*Full Length Research Paper*

## Social Business Innovation: Comparison of Operational Efficiency of Microfinance Institutions in Pakistan

Ather Azim Khan, Faisal Mustafa, Ambreen Khursheed\* and Faiza Siddiqui

Faculty of Management Studies, University of Central Punjab, Pakistan.

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### **Abstract**

Microfinance Institutions (MFIs) are distinct financial institutes as they focus on constructing a social business innovation model by adopting innovative strategies to efficiently alleviate poverty. Traditionally their performance was evaluated by financial ratios. The paper goes beyond of traditional methods by using two methodologies Operational Ratio Analysis and Data Envelopment Analysis-DEA approach for comparing the efficiency of Microfinance Institutions-MFIs working in Pakistan (2000-2017). The paper uses an input oriented model with Variable Returns to Scale (VRS) and Constant Returns to Scale (CRS) for determining the relationship between inputs and outputs. The findings reveal that majority of selected MFIs are operationally efficient. However, Orangi Pilot Project (OPP) and Khushali Bank are most efficient among the sampled MFIs. The findings further depict that efficiency of MFIs is sensitive towards the selection of inputs and outputs as variables and the choice of techniques in DEA approach. The paper would assist major investors of industry in understanding the existing scenario of MFIs in Pakistan.

**Keywords:** Operational ratio analysis; Operational efficiency; DEA, Variable Returns to Scale, Constant Returns to Scale.

**JEL Classification:** E6, F65.

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### INTRODUCTION

This research is the comparison of the operational efficiency of non-profit Microfinance Institutions-MFIs operating in Pakistan. 28 MFIs on the basis of maximum average loan balance per female borrowing are selected for analysis. Out of the selected MFIs, 18 are NGOs, eight are microfinance banks, and two are non-banking financial institutions. The efficiency of MFIs is analyzed in terms of operations and finances called, financial efficiency and operational efficiency. Operational efficiency of MFI means the capability of an

MFI to deliver services to its clients in the most active manner, while still ensuring high quality of its service and support. Financial efficiency is about saving cost and earning high returns with the given funds and structure. Inputs selected in this study are assets and personnel output as to get average loan balance per female borrowing and depositor per staff member.

Poverty is an undeniable fact in all economies, for reducing the level of poverty and number of deprived people, microfinance programs were started, in Asia. Microfinance Institutions-MFIs' development started in the 1970s but microfinance sector gained significant attention after the success of Grameen Bank of Bangladesh (Farooq & Khan, 2014). Various factors

determine the success of MFIs. Operational efficiency of MFIs is one extremely important factor as it affects operational cost and overall profitability of MFIs, which ultimately affects the objective of poverty alleviation (Kneiding & Mas, 2009). In Pakistan, the operational cost of MFIs varies a lot; this study links various high and low operational costs of MFIs to their performance. Further, this study aims to consider various aspects of operational efficiency of MFIs of Pakistan and links them to their performance to determine the effect of each element of operational efficiency on the output, both individually and collectively.

According to Tahir and Tahir (2014), MFIs are established with the purpose of providing financial facilities to the poor who want to start micro businesses and to help the deprived people to come out of poverty by providing different other related services to them. These services include savings, money transfer, insurance, leasing, and others such facilities.

Microfinance sector of Pakistan comprises of Microfinance Institutions (16), Microfinance Banks (10), Rural Support Programs (6) and the others (16). Governance structures and working models are different. Biggest organizations in terms of annual growth in the gross loan portfolio are APNA Bank and Khushali Bank (KBL), while the biggest contribution of funds was provided by Akhuwat that financed 42,000 new borrowers (Pakistan Microfinance Network, 2014).

Despite the innovative social goals targeted by MFIs, one of the critical aspects is self-sustainability of these intuitions. Thus, operational efficiency is the key factor for all MFIs to achieve and maintain sustainability. According to Kipsha (2013), efficiency means better use of inputs for maximizing output by firms; further, efficiency is one of the vital attributes of any MFI due to two main reasons, that are the input resources utilized by MFIs are limited and so their efficient use is mandatory and there is increased competition for donors in the microfinance sector across the world.

The objective of this study is to assess various levels of operational efficiency of MFIs working in Pakistan. This study will also assist the policy makers to identify and lessen the excessive use of inputs, which are irrelevant. This study will in turn aid to raise sustainability of MFIs in Pakistan.

## LITERATURE REVIEW

In the past many researchers like Abdelkader, Hathroubi, and Jemaa (2015), Ferdousi and Farhana (2013), Erasmus, Fabian, and Kipsha (2012),

Jayamaha (2012), Haq and Skully (2010), Ochola (2016), and Kablan (2012) used Data Envelopment Analysis (DEA) with Variable Return to Scale (VRS) and Constant Return to Scale (CRS) for measuring performance, effectiveness, and efficiency (financial and operational) of MFIs using secondary data. The inputs used were operating expenses, assets, and the number of employees, operating revenues, the number of branches, the number of deposit accounts, deposits, and financial expenditure. While the outputs used were benefit to the poorest, financial revenue, gross loan portfolio, the number of loans, advances and number of active borrowers. Arshad and Basharat (2014) used ratio analysis for comparing the efficiency of MFIs.

A number of authors like Ahmad (2011), Ferdousi and Farhana (2013), Abdelkader, Hathroubi and Jemaa (2015), Singh (2014), Haq and Skully (2010), Arshad and Basharat (2014) compared the efficiency of MFIs of Asian countries. Some researchers also investigated the efficiency of MFIs in different regions of the world including Ghana, Middle East, and North Africa (MENA), East Africa, and Sri-Lanka (Oteng-Abayie, 2011; Amanor and Frimpong, 2011; Jayamah, 2012 and Kablan 2012). Study on the efficiency of MFIs working across the world was also done by Bolli and Thi (2012) and in Sub-Saharan Africa a research was done by Darko (2013).

Although the sample of MFIs selected was different in all earlier research works, but most of the authors who measured the efficiency of MFIs concluded that banking MFIs are better than the other MFIs in long run and most MFIs working in Asian region got higher efficiency scores on average. The majority of authors emphasized improving efficiency status by developing managerial skills and technology.

## METHODOLOGY

In this study quantitative approach is used to analyze the operational efficiency of MFIs selected for the time period from the year 2000-2017. The population of this research comprises of all (non-profit) microfinance institutions providing services in Pakistan. Secondary data for the time period of 17 years, from 2000-2017 is collected from the online database (Mix Market, 2017) (See Appendix B, Table A6). In this study, 28 MFIs are sampled on the basis of allotment of maximum average loan balance per female borrowers. Because women empowerment is one of the main objectives of the majority of MFIs and the authors Hermes, Niels, and Lensink (2011) also described that loan given to

females is a substitute for measuring operational efficiency of an MFI. The techniques used are the Operational Ratio Analysis and Data Envelopment Analysis (DEA). The Data Envelopment Analysis (DEA) is a technique based on linear programming and it is used for evaluating performance efficiency of organizational units which are known as Decision Making Units (DMUs). This method purposes to assess how efficiently a (DMUs) utilizes the available resources for generating output. In general, DEA assess the performance of DMU Generally, the performance of a DMU is assessed with DEA under the efficiency concept and it is expressed as the ratio of weighted sum of outputs to a weighted sum of inputs and a common measure for relative efficiency is as follows.

$$\text{Efficiency} = \frac{\text{Weighted sum of Outputs}}{\text{Weighted sum of Inputs}} \dots\dots\dots(1)$$

Efficiencies attained from DEA technique are comparative to best performance of a virtual DMU. In this technique DMU having best performing is allocated with an efficiency score of unity. While performance of other units are assigned values ranging between zero and one. DEA compares the efficiency of selected DMU with all remaining linear combinations of DMUs. Mathematically, DEA measures efficiency by using weights and its usual notation of efficiency is expressed as:

$$\text{Efficiency} = \frac{\sum_k u_k y_{kj}}{\sum_i v_i x_{ij}}$$

$$\text{Efficiency of unit } j = \frac{u_1 y_{1j} + u_2 y_{2j} + \dots\dots\dots(2)}{v_1 x_{1j} + v_2 x_{2j} + \dots\dots\dots(3)}$$

Where,

- $u_1$  = the weight is given to output  $i$
- $y_{1j}$  = the amount of output 1 from unit  $j$
- $v_1$  = weight given to input 1
- $x_{1j}$  = amount of input 1 from unit  $j$

In the above equation, 'u' and 'v' are weight which are assigned to inputs and outputs for measuring the efficiency of MFIs on the scale of (0,1). Based on this assumption, units can be classified into efficient and inefficient.

### Input – Oriented DEA Approach

In this study, following Farrell (1957), input oriented DEA approach is used for measuring the efficiency. Following equation represents the production possibility

set for a particular DMU.

$$T = \{(x, y) : \sum_{j=1}^J \lambda_j x_{nj} \leq x_n (n = 1, \dots, N), \sum_{j=1}^J \lambda_j y_{mj} \leq y_m (m = 1, \dots, M), \sum_{j=1}^J \lambda_j = 1, \dots, J)\} \dots\dots\dots(4)$$

In the above equation, there are  $j$  observations and for examining the reference points on the frontier weights, ' $\lambda_j$ ' are used. The constraints used  $\sum_{j=1}^J \lambda_j = 1$ , represents that the sum of lamdas is equal to one and this also ensures the assumption of Variable Return to Scale (VRS). While, 'M' represents outputs, 'N' represents inputs and production possibility set is represented by 'T'. Table 1 shows the names of selected MFIs for this study.

### Operational Ratio Analysis (1)

In order to measure operational efficiency of the selected 28 MFIs in Pakistan, the following ten operational ratios are used. In the past researchers like Ahmad, Ahmad, and Khan (2014), Lafourcade, Isern, and Patricia Mwangi (2005) have also used these ratios to measure the efficiency of MFIs. Table 2 shows the description of selected variables with their formulas.

### Data Envelopment Analysis (DEA)

The second technique used in this paper is Data Envelopment Analysis (DEA), which is applied on 28 MFIs by dividing them into two sets, first set consists of 14 MFIs having the largest amount of average balance per female borrower, while the second set comprises of the remaining 14 MFIs having the smallest amount of average balance per female borrower for analyzing operational efficiency of microfinance institutions working in Pakistan.

According to Mahmood, Khan, and Khan (2014), DEA model is a non-parametric mathematical program approach for frontier estimation and the basic principle of this model is that efficient institutes produce a definite amount or more output by using the given input level. In DEA, MFIs efficiency is assessed by two approaches first is Production Approach and second is Intermediation Approach. In this study Production Approach is used as this approach assesses the efficiency of MFIs by considering an increase in depositors, loan balances, and deposit accounts with incurring labour and capital cost; efficient units are allocated an efficiency score, which is equal to one ( $\theta = 1$ ).

**Table 1.** MFIs Selected on the Basis of Average Loan Balance per Female Borrower

Serial No.	Names of Sampled MFIs in Pakistan	Average Loan Balance per Female Borrowing (Rs.)
1	Foundation for International Community Assistance (FINCA) Pakistan	47,975.43
2	Accion Microfinance Bank (AMFB)	27,827.87
3	The Muslim Food Board (TMFB)	26,781.81
4	Pak-Oman Microfinance Bank Ltd (POMFB)	24,769.19
5	National Railway Safety Board (NRSB Bank)	24,352.70
6	Development Action for Mobilization & Emancipation (DAMEN)	23,843.10
7	Soon Valley Development Program (SVDP)	21,671.93
8	First Microfinance Bank (FMFB)	19,764.29
9	Khushali Bank	19,321.90
10	Community support concern (CSC)	18,875.19
11	Kashf Bank	17,345.89
12	Bangladesh Rehabilitation Assistance Committee (BRAC-Pak)	16,994.21
13	Orix Leasing Pakistan Ltd.	15,338.23
14	Jinnah Welfare Society (JWS)	14,541.93
15	Shadab Rural Development Organization (SRDO)	14,107.80
16	Rural Community Development Society (RCDS)	13,704.40
17	Pakistan Rural Support Programme (PRSP)	12,882.81
18	The National Rural Support Programme (NRSP)	12,650.37
19	Farmers Friend Organization (FFO)	11,978.05
20	Association for Social Advancement Pakistan (ASA)	11,290.32
21	Safco Support Foundation (SSF)	10,945.46
22	Akhwat	10,910.30
23	Orangi Pilot Project (OPP)	10,860.44
24	Thardeep Rural Development programme (TRDP)	97,22.18
25	Saath	91,04.01
26	Ghazi Barotha Taraqiatildara (GBTI)	90,89.09
27	Sungi	88,39.17
28	Sarhad Rural Support Programme (SRSP)	79,37.56

**Source:** (Mix market, 2017)**Table 2.** Variable Description

Serial No.	Variable	Description	Formula
1	dpsm	Depositors per staff member	Total Liabilities/Total Equity
2	bpsm	Borrowers per staff member	Number of active borrowers/number of personnel
3	lpsm	Loans per staff member	Adjusted number of loans outstanding/Number of Personnel
4	oelp	Operating expense per loan portfolio	Operating expense / average loan portfolio
5	pelp	Personnel expense per loan portfolio	Personnel expense / loan portfolio
6	asc	Average salary per GNI per capita	Average salary / GNI per capita
7	wor	Write-off ratio	Value of loans write off/average gross
8	dasm	Deposit accounts per staff member	Number of deposit account /Number of Personnel
9	albfb	Average loan balance per female borrowing	Average loan balance / female borrowing
10	sm	Staff Member/Personnel	Number of employees (Absolute measure)

**Source:** (Mix market, 2017)

There are two methods in DEA, first is output oriented and second is input oriented. In this study input-oriented approach is applied on 28 MFIs treated as Decision Making Units (DMUs) in DEA. It is the most commonly used method in previous studies; in this method, DMUs strive to make optimal use of inputs at a given level of output.

In this study, we have classified variables in two broader sets that are, inputs and outputs. Input variables consist of Personnel and Assets. Where Personnel means the human resource hired by MFIs. Assets are selected as the total physical assets engaged in MFIs operations and their monetary values are taken in local Pakistani Rupees (PKR). The reason for selecting these inputs is their relevance and frequent use in previous studies; the two output variables nominated are depositor per staff member and average loan balance per female borrower, the reason for selecting these outputs is their significance as the achievement of these variables is one of the main objectives of MFIs.

In DEA model there are four techniques Increasing Return to Scale (IRS), Decreasing Return to Scale (DRS), Constant Return to Scale (CRS), and Variable Return to Scale (VRS). According to Jayamaha (2012), Abdelkader, Hathroubi, and Jemaa (2015), the most reliable and commonly used techniques of DEA model are CRS and VRS. In CRS the outputs are dependent on the number of inputs as the output may increase or decrease concurrently with increase or decrease in the inputs. While in VRS any change (increase or decrease) in input does not lead to a proportional change in outputs. In this study CRS and VRS both techniques are applied on the data. (See Appendix B, Table A1, Table A2, Table A3, Table A4 and Table A5).

## RESULTS

### Results of Operational Ratio Analysis

Increasing operational efficiency is desired by the managers of all MFIs. The results of ratio analysis of 28 MFIs showed that different MFIs are significantly efficient in maintaining different operational ratios. TMFB has the highest depositor per staff member (dpsm) ratio. The highest ratio is 515.20, which shows that TMFB has maintained the highest level of efficiency. While the lowest (dpsm) ratio is of BRAC-Pak, that is 53.04. The highest ratio of borrower per staff member (bpsm) is shown by Orangi Pilot Project, that is 326.45 and the lowest ratio is of FINCA Pakistan

that is 46.08. Higher ratios generally show better efficiency with a given set of operational facilities. Loans per staff member (lpsm) show that how many MFIs are utilizing their staff for distributing loans and in return the increase in their loan portfolio. The highest ratio of 'lpsm' is of Orix Leasing, that is 287.07, while, the lowest ratio is shown by SSF, that is 0.30.

In operating expense per loan portfolio (oelp) ratio the MFI with the lowest ratio is considered more efficient than others. This ratio shows operating expense incurred on each loan disbursement, and operating expense is shown as a percentage of the gross loan portfolios. Among our selected MFIs the lowest ratio of 'oelp' is shown by NRSP, that is 0.007 and highest ratio is 0.59193 shown by BRAC-Pak. The ratio personnel expense per loan portfolio (pelp) shows the personnel expense incurred on the loan portfolio. The MFI with the lowest ratio is considered as the most efficient and in this case Orangi Pilot Project has shown the lowest 'pelp' ratio that is 0.04, while the highest ratio of 'pelp' is of SSF that is 180.

The highest ratio of average salary per GNI per capita (asc) is 366.59 of Khushali Bank and the lowest ratio is of SSF that is 0.0147, which shows SSF is inefficient in this regard. Write offs represent the poor performance of loan processing and collection departments. Lesser write off ratio shows that lesser amounts were written off. Hence it shows the better operational performance of staff members. In write off ratio (wor) lowest ratio is 0.001 of JWS and highest ratio is of TRDP that is, 4.21. Deposit accounts per staff member (dasm) shows the number of deposit accounts opened by staff members. The more is the ratio the better it is. Among the selected MFIs the highest ratio of 'dasm' is of SSF, that is 10,945 and lowest ratio is shown 1.66 by NRSP. Average loan balance per female borrowing (albf) shows the loan allotted to females, a higher ratio is better. The highest ratio of 'albf' is of FINCA Pakistan, that is 47,975.4 and lowest is of SSF that is 140.36. So FINCA Pakistan is more operationally efficient than SSF in terms of this ratio. The number of staff members (sm) in absolute terms is also compared among 28 selected MFIs, which shows that Khushali Bank has the highest number of staff members that is 2,622, while Saath has the lowest number of staff members that is 25.

### Results of DEA Model

Results of DEA model show that majority of selected MFIs are performing excellently in maintaining operational efficiency by scoring more than 50%

efficiency with both CRS and VRS techniques. In DEA 100% efficiency is considered equal to 1. So no MFI can score more than 1 (100%) and if any MFI scores equal to 1 it means it is 100% efficient and 100% is also the upper limit, scores less than 1 show lesser levels of efficiency. Among the first set of selected 14 MFIs with CRS technique only two MFIs, which are GBTI and AMFB scored 1 (100%). While 12 MFIs scored less than 1 and are operationally less efficient.

While with VRS technique four MFIs (AMFB, CSC, FINCA Pakistan, and GBTI) scored 1, while 10 MFIs (ASA Pakistan, Akhuwat, BRAC-Pak, JWS, DAMEN, FFO, FMFB Pakistan, Khushali Bank, NRSP, and JWS) scored less than 1 showing lesser efficiency. In the second set of 14 MFIs with CRS technique, only one MFI (Sungi) scored 1 in efficiency, which means that this MFI is operationally efficient than the others. While 13 MFIs (NRSP Bank, Orangi, Orix Leasing, POMFB, PRSP, RCDS, SRSO, SRSP, SSF, SVDP, Saath, TMFB, and TRDP) got efficiency scores less than 1.

With VRS technique five MFIs (SRSP, SVDP, Saath, Sungi, and TMFB) scored efficiency equal to 1 and nine MFIs (NRSP Bank, Orangi, Orix Leasing, POMFB, PRSP, RCDS, SRSO, SSF, and TRDP) scored less than 1. The results show five MFIs are operationally efficient under this technique.

Overall results show that out of selected 28 MFIs, 12 MFIs scored 1 in efficiency, which shows 12 MFIs are utilizing their assets and personnel in an efficient manner to generate maximum loan balance per female borrower and depositors serviced by staff members.

## DISCUSSION

The results of ratio analysis show that Orangi Pilot Project outperforms in two ratios, first is borrowers per staff member (bpsm) and second is personnel expense per loan portfolio (pelp) ratio, while in average salary per GNI per capita (asc) and in retaining highest number of staff members Khushali Bank leads among 28 selected MFIs. Hence one NGO (Orangi) and one MFI bank (Khushali Bank) lead among selected MFIs working in Pakistan. The results show that these two MFIs are more operationally efficient and are providing the optimal services to their clients. According to DEA model with VRS and CRS techniques applied on two inputs (assets and personnel) to get two outputs (average loan balance per female borrowing and depositor per staff member) show that among 28 selected MFIs, 12 MFIs are operationally efficient. Our findings support the literature that most of the MFIs

working in Asian region perform better and are operationally efficient.

The study recommends that the use of DEA method is more useful for comparing the operational efficiencies of MFIs. All microfinance institutions need to maintain a balance in their financial and operational efficiency in order to ensure their survival in a competitive market along with meeting their social objectives. DEA method is an appropriate method as it helps to examine the overall performance of microfinance institutions by using different combinations of inputs and outputs.

## CONCLUSION

In this study, we have analyzed operational efficiency of microfinance institutions operating in Pakistan during the time period of 14 years from 2000-2017. For this, we have used ratio analysis and DEA approach; we compared the operational efficiency of selected MFIs working in Pakistan. Both these approaches allowed us to measure the operational efficiency on two different scales which are Constant Return to Scale (CRS) and Variable Return to Scale (VRS). The output obtained from ratio analysis showed that Orangi Pilot Project and Khushali Bank are more operationally efficient among the selected 28 MFIs. While the results obtained from DEA approach showed that among 28 selected MFIs, 12 MFIs are operationally efficient. The findings obtained in this study also support the literature that most of the MFIs working in Asian region are operationally efficient. From the findings, it is recommended that other MFIs should also try to improve their operational efficiency in order to improve their overall performance.

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**APPENDIX****Table 3.** Input and output data used in DEA Model

<b>MFI Name</b>	<b>Outputs</b>		<b>Inputs</b>	
	Depositors per staff member (in USD)	Average loan balance per female borrower (in USD)	Assets (in USD)	Personnel (in number)
<b>AMFB</b>	115.80	27827.87	17481162	271
<b>ASA Pakistan</b>	0	11290.32	27931433	1044
<b>Akhuwat</b>	0	10910.30	41023626	1549
<b>BRAC-Pak</b>	53.04	16994.21	1.24E+09	610
<b>CSC</b>	25.17	18875.19	7576320	180
<b>DAMEN</b>	0	23843.10	13228820	242
<b>FFO</b>	0	11978.05	3550100	176
<b>FINCA-Pakistan</b>	178.40	47975.43	63411548	1268
<b>FMFB-Pakistan</b>	138.42	19764.29	1.06E+08	1169
<b>GBTI</b>	0	9089.09	1270937	67
<b>JWS</b>	0	14541.93	7354239	197
<b>Kashf Foundation</b>	112.50	17345.89	68834614	2061
<b>Khushali Bank</b>	100.26	19321.90	1.66E+08	2622
<b>NRSP</b>	5.13	12650.37	9.78E+09	2572
<b>NRSP BANK</b>	102.60	24352.70	1.18E+10	1429
<b>OPD</b>	0	28608.42	1390562	59
<b>Orangi</b>	0	10860.44	6.82E+08	100
<b>Orix Leasing</b>	0	15338.23	3.61E+08	70
<b>POMFB</b>	90.83	24769.19	1.11E+09	206
<b>PRSP</b>	134.14	12882.81	2.52E+09	643
<b>RCDS</b>	0	13704.40	9509946	297
<b>SRSO</b>	0	14107.80	1.36E+09	334
<b>SRSP</b>	0	7937.56	74495745	26
<b>SSF</b>	140.36	140.36	6.12E+08	245
<b>SVDP</b>	0	21671.93	1.38E+08	47
<b>Saath</b>	0	9104.01	83441390	25
<b>Sungi</b>	446.12	8839.17	1.14E+08	54
<b>TMFB</b>	515.20	26781.81	1.64E+10	2058
<b>TRDP</b>	0	9722.18	1.56E+09	589

Source: www.mixmarket.org