

## **DETERMINANTS OF SUSTAINABILITY OF MICROFINANCE SECTOR IN INDIA**

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### **ABSTRACT**

*Most of the Microfinance Institutions (MFIs) are facing the problem in maintaining the sustainability in their operation. Several studies have been conducted to determine the factors affecting the financial and operational sustainability of MFIs. However, there are not many studies conducted in this area in India. Therefore, this study was conducted to fill the gap. This study is based on quantitative research approach using Probit Regression model as the main data analysis technique. The study relied on nine years secondary data obtained from the mix-market database for 65 selected MFIs in India. The study found that average loan balance per borrower, size of an MFI, cost per borrower and yield on gross loan portfolio affect the operational sustainability of Indian MFIs significantly. Therefore, this study recommends microfinance institutions to increase their economies of scale which will reduce the cost per borrower.*

### **Introduction**

Microfinance is the provision of financial service to the poor people with very small business or business projects. The concept of microfinance is not new. Savings and credit groups that operated for centuries include the "susus" of Ghana, "chit funds" in

India, "tandas" in Mexico, "arisan" in Indonesia, "cheetu" in Sri Lanka, "tontines" in West Africa, and "pasanaku" in Bolivia, as well as numerous savings clubs and burial societies found all over the world. In its short history, microfinance has had a major impact on the lending to the poor in the world. It received a significant start in

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1976 when a Bangladeshi Prof. Muhammed Yunus, used his own money to make a \$27 loan to 42 village women (Courts, 2008: 58). Most poor people manage to mobilise resources to develop their enterprises and their dwellings slowly over time. Financial services could enable the poor to leverage their initiative, accelerating the process of building incomes, assets and economic security. "Microfinance" is often defined as financial services for the poor and low-income clients offered by different types of service providers. In practice, the term is often used more narrowly to refer to loans and other services from providers that identify themselves as "microfinance institutions" (MFIs). These institutions commonly tend to use new methods developed over the last 30 years to deliver very small loans to unsalaried borrowers, taking little or no collateral. These methods include group lending and liability, pre-loan savings requirements, gradually increasing loan sizes, and an implicit guarantee of ready access to future loans if present loans are repaid fully and promptly.

However, conventional finance institutions seldom lend down market to serve the needs of low-income families and women-headed households who are very often denied access to credit for any purpose, making the discussion of the level of interest rate and other terms of finance irrelevant. Therefore, the fundamental problem is not so much of unaffordable terms of loan as the lack of access to credit itself.

Microfinance has become a part of financial services in India in the 1980s. The microfinance institutions provide financial service to a wide spectrum of clients in rural part of India. As it deals with poorer sections of the society and with a relatively higher percentage of interest rate, there exists a perception that the micro lending industry in India is a high-risk industry. And due to the entrepreneurial nature of the micro lending industry, risk management should be an integral part of every MFI in order to maintain control and ensure sustainability.

But most of the MFIs are facing a major problem of attaining sustainability (operational and financial) (Shcreiner, 2000; Woller, 2000; Christian et al, 1995). Besides outreach and impact measure, sustainability also has become one of the core criteria to evaluate the financial and operational performance of MFIs. Many studies were conducted on the sustainability of MFIs. Randhawa and Gallardo (2003) postulate that without continuous support for funding and technical assistance, sustainability of MFIs is dubious and uncertain. However, it is important to find out the ways and means to ensure sustainable provision of microfinance industry and poverty reduction services. Several studies have been piloted to determine the factors distressing the operational and financial sustainability of MFIs in different countries. However, the significance of factors in affecting the operational and financial sustainability of MFIs varies with studies and countries. While some of the determinants are found to be significant

in one country or economy or MFI, they may not be significant for others (Cull et al, 2007; Woller and Shkreiner 2002; Christian et al, 1995). The main aim of the present study is to find out the factors affecting the sustainability of the microfinance sector in India. By using the Binary Probit model, this study examined the determinants of operational sustainability of Indian MFIs during the period 2005-2013.

### Review of Literature

Sustainability refers to the ability of an MFI to cover its operating and other costs from generated revenue, provide for profit and operate without subsidies or donation from government or any other donor. Traditionally, sustainability addressed microfinance institutions' ability to stand on their own feet financially after a period of operations. To become financially sustainable requires an institution to cover all its costs like administration costs, cost of default, cost of funding, etc. A majority of MFIs do not cover their costs and it appears that cost-based pricing is a lever that MFIs are not fully utilising (Pollinger, Outhwaite and Cordero Guzmán, 2007). Sustainability in microfinance can be considered at several levels: institutional, group and individual and can relate to organisational, managerial, and financial aspects (Sa-Dhan, 2003). The issue of financial sustainability of microfinance institutions has involved more attention in mainstream analysis at the outlay of the sustainability of the client/borrower. According to Sharma and Nepal (1997), a microfinance institution reaches sustainability when its operating income from loans is

satisfactory to cover all the operating costs. They contend that sustainability of a microfinance institution comprises both financial viability and self-sufficiency. The micro-credit summit campaign, on the other hand, refers to a microfinance institution as operational and financially self-sufficient if it is able to cover all actual operating expenses from income created from its financial services and operations, after adjustment for inflation and subsidies. It has been argued that the concept of sustainability must include, amongst other criteria, like obtaining funds at market rate and mobilisation of local resources. Thus, research recommends sustainability measures that include, among others, like repayment rate, operating cost ratio, market interest rates and portfolio quality. To provide long-term reliable services to users a microfinance institute needs to be financially self-sustainable.

Most literature mentions that financial sustainability is the ability of MFIs to cover costs from earned revenue. Rosenberg (2009) identified 6 broad indicators of MFIs performance and sustainability. These are Return On Asset (ROA), Return On Equity (ROE), Adjusted Return on Asset (AROA), Financial Self-Sufficiency (FSS), Operational Self-Sufficiency (OSS) and Subsidy Dependency Indicator (SDI). But in the present study we are considering Operational Self-Sufficiency (OSS) and Financial Self-Sufficiency (FSS) as the main measures of Sustainability of MFIs. Bogan (2011) states that the capital structure of lending institutions is increasingly becoming a prominent issue in

the world of finance as microfinance institutions have risen to the lead as vital lending institutions in the development process of many of developing or underdeveloped countries. But the capital constraints have slowed down the expansion of microfinance programmes and become a problem for the sustainability of the microfinance institutions. Bogan (2011), strived to create the information for better understanding of the link between capital structure and MFI performance and explored the impact of capital structure in improving MFI efficiency and financial sustainability by examining the optimal capital structure of MFIs in Africa, East Asia, Eastern Europe, Latin America, Middle East and South Asia for the years 2003 and 2006, by collecting data from MIX Market database and categorised the funding procedure of MFIs into the life cycle theory and profit-incentive theory. The life cycle theory is the most popular explanation of the link between capital structure, sustainability, efficiency and outreach. However, it does not seem to tell the entire story with respect to MFI financing. The life cycle model has little explanatory power, while other economic and financial variables explain a great deal.

Osoimehin et al (2011), investigated the microfinance institutions' outreach in South-West Nigeria. They studied the determinants of microfinance institutions, outreach by using annual panel data of 80 MFIs in Lagos and Ondo States over a period of six years from 2005 to 2010. They used Generalised Least Squares method to examine

the determinants and trend of outreach of microfinance institutions. The relationship between determinants of outreach of the selected MFIs was analysed by using pooled OLS method. The findings of the study suggest that the microfinance outreach is positively and significantly determined by average loan size, debt-equity ratio, loan repayment rates and salaries. Tehulu (2013), empirically examined the determinants of financial sustainability of microfinance institutions in East Africa by using unbalanced panel data of 23 MFIs consisting of 121 observations for the period 2004-2009. The results of econometric analysis found that management inefficiency and portfolio at risk have a negative and significant impact on financial sustainability. It suggested that management inefficiency, loan intensity, portfolio at risk and size are important determinants of MFIs' financial sustainability in East Africa.

The present research has been conducted to determine the factors that affect the operational self-sufficiency of microfinance institutions in India. Operational self-sufficiency (OSS) refers to the capability of MFIs to meet all administrative costs and loan losses from operating income and it is computed as the ratio of operating income to the sum of administrative expenses, loan losses and interest expenses. A firm is operationally sustainable if its OSS is 100 per cent or more. Therefore, the study attempts to provide a clear understanding about the factors that are directly affecting the operational sustainability of the MFIs. If there

is a clearer understanding by MFIs of the factors that affect their operational sustainability, they will give greater attention to those factors and strive to manage them properly in order to make themselves operationally and financially self-sufficient. This research is also aimed to assist microfinance practitioners in measuring the operational performances of MFIs and consequently give some insights into how MFIs' operational performances could be improved by showing gap. The objectives of this study are as follows:

1. To identify the factors affecting the operational self-sufficiency of the microfinance sector in India
2. To find out whether there is any significant difference in the performance indicators in terms of legal status of microfinance sector in India

#### **Data Source**

This study has used 65 MFIs, from the total population of 85 MFIs in the country for the time period 2005-2013. The data were provided by the "Mix Market" website which is known as the Microfinance Information Exchange (MIX), which is a not-for-profit organisation. The samples taken are believed to be representative to all the microfinance institutions in India given their size and age. In this study operational self-sufficiency is used as dependent variable since the study seeks to measure the determinants of the operational self-sufficiency of MFIs in India. The operational self-sufficiency is computed

as the ratio of operating income to the sum of administrative expenses, loan losses and interest expenses. It is an important measure of sustainability of the lending operation of the MFIs. The study has also included several explanatory variables. The significance of the variables included in the model is given below.

- a. **Yield:** Portfolio yield is a percentage or proportion of average gross return with outstanding portfolio. It is an indicator which shows the institution's ability to generate cash revenue from its outstanding portfolio. It measures the actual interest payments received by an MFI from its clients during a particular period. To remain sustainable, Nadiya (2011) recommended that MFI managers should set the interest rates of the MFIs, which covers its total cost; comprising cost of funds, transaction cost and default costs. Therefore, the sustainability of a microfinance institution depends on how much interest income they earn from their operations. A study by Crombrugghe, Tenikue and Sureda (2007) indicates that the yield affects the operational self-sufficiency (OSS) of a microfinance institution.
- b. **Portfolio at Risk:** The portfolio at risk (PAR) is the measure which indicates the MFIs efficiency in making repayment of loans. Higher PAR is the indicator of inefficient microfinance which has got low repayment rates. This in return indicates the less

- operational sustainability of the MFI. The higher the PAR, the more inefficient the microfinance will be and, therefore, the less financially sustainable. The study by Nyamsogoro (2010) shows the negative relationship between PAR and operational sustainability of microfinance institutions.
- c. **Number of Active Borrowers:** Crombrughe et al (2007) analysed that increasing number of borrowers would help the MFI to lower the average operating cost. This indicates that an increase in number of borrowers will help to raise the sustainability indicators in OSS. In the Indian context, as per these researchers, through serving one more borrower MFIs don't bear any costs, but by offering larger loans to the borrowers MFIs could ultimately raise costs more than profits. They have also concluded on their finding that increasing the number of borrowers is the most likely way to reduce costs, particularly in group-based delivery models.
- d. **Cost per Borrower:** G. Daniel Nyamsogoro (2010) analysed the statistically insignificant relationship between cost per borrower and financial sustainability of microfinance institutions in Tanzania. He concluded that all other things remain constant, the higher staff pay could lead them to more leisure than in doing more work for the MFIs. This can also help to explain why possibly the administrative expenses are positively related to financial sustainability.
- e. **Operating Expense Ratio:** This is the ratio of total operating cost to outstanding loan portfolio. The lower the ratio, all things being equal, will imply efficiency. The econometric results of G. Daniel Nyamsogoro (2010) findings suggest that the operating expenses ratio strongly affects the sustainability of microfinance institutions. The MFIs become more profitable by reducing operating costs at a given level of outstanding portfolio, resulting in financial sustainability. Dissanayake (2012) in his research on MFIs in Sri Lanka, identified a strong significant negative correlation in Operating Expense Ratio to Operational Self-Sufficiency Ratio. He concluded that the Operating Expense Ratio is a statistically significant predictor variable in determining OSS of the Sri Lankan microfinance institutions.
- f. **Debt to Equity Ratio:** The alignment of various sources of capital to an MFI is known as capital structure. Bogan et al (2007) found that the sustainability of MFIs is associated with the capital structure of the institutions. Dissanayake (2012) found that, there is a strong and significant negative correlation in Debt/Equity Ratio (capital structure) to Operational Self-Sufficiency Ratio. This indicates that change in Debt/Equity Ratio (capital structure) is negatively

- contributing towards changes in to Operational Self-Sufficiency Ratio significantly. With this finding in mind, this study seeks to analyse the relationship between capital structure and operational sustainability of microfinance institutions in India.
- g. **Size of an MFI:** Another important factor of OSS of an MFI is its size. The size of an MFI is measured by the value of its assets (Mersland and Storm, 2009; Hermes et al, 2008; Mersland and Storm, 2008; Bogan et al, 2007; Hartarska, 2005). According to Cull et al (2007), the size of an MFI is significantly positively linked to its financial performance. A study on outreach and profitability of microfinance institutions in Ghana by Kyereboah et al (2008) found that the size of an MFI had a significant positive impact on profitability. Hartarska and Nadolnyak (2007) investigate the effect of the size of an MFI on its financial sustainability (FSS) and operational sustainability (OSS), and found that size of a MFI has a positive significant impact on OSS.
- h. **Loan Intensity:** It is determined as the Gross Loan Portfolio as a percentage of total asset. The gross loan portfolio is the main source of income of an MFI. Thus, other things being equal, higher the loan higher the interest income for MFIs. Our study will find out the impact of loan intensity on operational self-sufficiency.
- i. **Personnel Productivity Ratio:** It measures the amount of quality services delivered by microfinance staff to their clients and quantifies the employees' efforts to deliver MFIs' output.
- j. **Age of MFIs:** The age talks about the period that an MFI has been in operation since its initial inception. Many studies (Cull et al, 2007; Gonzalez, 2007) indicate that MFIs' age relates to financial sustainability. Robinson, (2001), Bogan et al (2007) and Cull et al (2007) found that the age of a microfinance institution was related to its sustainability. The study of Nyamsogoro (2010) suggested that there was no significant relationship between the MFIs' sustainability and its age. Findings of Nadiya (2011), show that MFI's age is not significant in explaining the changes in OSS. Therefore, the present study will try to find out whether there is any relationship between the MFI's age and OSS in India.
- k. **Legal Status:** A microfinance institution in India can lend without registration at present, though the proposed MFI Bill suggests mandatory registration for lending. Each legal structure has different requirements and privileges. MFIs in India are generally classified as follows:
- l. Non-governmental organisations (NGOs) engaged in microfinance (NGO-

- MFIs), comprising Societies and Trusts generally at the grassroots level
2. Generally defined as not-for-profit organisations (Section 25 of Companies Act)
  3. For-profit non-banking financial companies (NBFCs).

This paper will try to find out the impact of legal status on operational self-sufficiency in microfinance sector in India.

## Methodology

The objective of this paper is to identify the determinants of the operational sustainability of MFIs in India. In our case the dependent variable is binary variable. A firm is operationally sustainable if its OSS is 100 per cent or more. Therefore, our dependent variable is either 1 if MFI is operationally sustainable or zero if MFI is operationally non-sustainable. The paper has used the Binary Probit Regression model in the following way:

$$Y_{it}^* = \beta_0 + \beta_1 OETA_{i,t} + \beta_2 LNNTA_{i,t} + \beta_3 DE_{i,t} + \beta_4 PAR_{i,t} + \beta_5 LNNB_{i,t} + \beta_6 LTA_{i,t} \\ + \beta_7 DTA_{i,t} + \beta_8 yield_{i,t} + \beta_9 CPB_{i,t} + \beta_{10} Age_{i,t} + \beta_{11} Legal_{i,t} + \beta_{12} PP_{it} \\ + \beta_{13} ALBPB_{i,t} + \varepsilon_{i,t}$$

The probability that a particular MFI will be operationally self-sustainable ( $P(Y=1)$ ) can be predicted using the following equation:

$$P(y = 1) = \frac{1}{1+e^z}$$

Where  $z = \beta_0 + \beta_1 OETA_{i,t} + \beta_2 LNNTA_{i,t} + \beta_3 DE_{i,t} + \beta_4 PAR_{i,t} + \beta_5 LNNB_{i,t} + \beta_6 LTA_{i,t} + \beta_7 DTA_{i,t} + \beta_8 yield_{i,t} + \beta_9 CPB_{i,t} + \beta_{10} Age_{i,t} + \beta_{11} Legal_{i,t} + \beta_{12} PP_{it} + \beta_{13} ALBPB_{i,t}$

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|--|---|
| <p>a. OETA: Operating expense to total asset is used as an indicator of management's ability to control costs.</p>           | <p>c. Debt to Equity: It is a measurement of the relative level of debt. It is measured as: Total Debt/Total Equity.</p>        |
| <p>b. LNNTA: In this study, total asset is used as a proxy for firm size. Firm Size = Natural logarithm of total assets.</p> | <p>d. Portfolio at risk (PAR): This variable represents the level of credit risk or inversely portfolio quality and in this</p> |

	study the portfolio at risk greater than 30 days is used.	H1: Operating expense to total asset has a negative impact on the operational sustainability of MFIs.
e.	LNNB: It is measured as the natural logarithm of the number of active borrowers served by an MFI. This is an indicator for breadth of outreach.	H2: Size of MFIs has a positive impact on the operational sustainability of the same.
f.	LTA: It is determined as the Gross Loan Portfolio as a percentage of total asset. It is the indication of the loan intensity of MFIs.	H3: There is a relationship between breadth of outreach and operational sustainability of MFIs.
g.	DTA: Proxy for deposit mobilisation is the amount of total deposit as a percentage of total assets.	H4: Low portfolio quality is significantly associated with poor operational sustainability of MFIs.
h.	Yield: Adjusted financial revenue from Loan Portfolio/Adj. average GLP.	H5: Debt to Equity has a positive impact on the operational sustainability of MFIs.
i.	Cost per borrower (CPB): It is determined by operating expense per active borrower	H6: Loans to total asset positively affects the operational sustainability of MFIs positively.
j.	PP: Personnel Productivity Ratio is used as a proxy for quality services delivered by microfinance staff to their clients.	H7: Deposit to total assets positively contributes toward the operational sustainability of MFIs.
k.	ALBPB (Average loan balance per borrower): It is a proxy for depth of outreach. Smaller loans are generally taken to indicate greater depth of outreach. This variable measures the efficiency of microfinance institutions in selling loans.	

### Results

After splitting the sample into two sub-groups of NBFC and Non-NBFC MFIs, we have performed a two sample mean difference test at 5 per cent significance level. The results reveal the core characteristics which differ significantly between NBFC and Non-NBFC MFIs in India. The age of the institution, deposit asset ratio, debt to equity ratio, average deposit/ GNI per capita and yield on gross portfolio significantly vary between NBFC and Non-NBFC MFIs. NBFCs are older than Non-NBFC MFIs. They mobilise more deposits as

### Research Hypotheses

The study has tested the following research hypotheses which are formulated based on prior empirical literature.

testified by the higher deposit/asset ratio. A further indication of their capacity to collect savings is shown by the higher level of deposit per depositor over GNI per capita, which is also an indication of the higher market segment on which they operate.

The financial performance does not reflect differences in legal status. The OER, RoA and RoE are not statistically different between both sub-samples. NBFCs have higher volume

of total assets, but this difference is not statistically significant. Although on an average NBFC MFIs have a higher share of debt in percentage of their total liabilities, they do not attract more commercial funding as one would have expected. Unregulated MFIs are mainly funded via equity to a greater extent than regulated MFIs but the level of capitalisation is not a key distinctive feature between the two categories of institutions.

**Table 1 : Two Sample Mean Difference Between NBFC and Non-NBFC MFIs**

	NBFC	Non-NBFC	Difference in Means
Age	11	6	yes
Total assets	81367482	15002418	no
Deposit to asset ratio	0.45	0.19	yes
Capital asset ratio	0.35	0.31	no
Debt to equity	8.15	11.45	yes
Average loan/ GNI per capita	1.94	0.56	yes
Average deposit / GNI per capita	0.31	0.06	yes
Percentage of women borrower	0.62	0.65	no
Real yield on gross Portfolio	0.14	0.10	yes
Return on assets (ROA)	-0.029	-0.021	no
Return on equity (ROE)			
Operational expense ratio (OER)	0.19	0.13	no

A test for multi-collinearity was performed using variance inflation factor (VIF). The VIF value for each explanatory variable becomes less than 8 indicating that multi-collinearity problems are not of concern. As a rule of thumb, if the VIF for a variable exceeds 10, that variable is said to be highly collinear (Gujarati & Sangeetha, 2008).

**Table 2: VIF Result**

Variables	VIF	1/VIF
LNTA	6.51	0.15
LNNB	7.57	0.13
DTA	3.11	0.32
OETA	2.44	0.41
PAR	3.22	0.31
DE	1.19	0.84
LTA	1.17	0.85
Average	3.60	

A model fitness test is checked by the Wald test (Wald  $\chi^2 = 40.27$ ,  $\text{prob} > \chi^2 = 0.0000$ ). This shows that the explanatory power of the model is reasonably high. The coefficient of operating expense /asset ratio (OETA) is, as expected, negative indicating a negative relationship with MFIs' operational self-sufficiency. The result is statistically significant at the 1 per cent level and implies that a decrease (an increase) in this variable increases (reduces) the sustainability of MFIs operating in India. This indicates poor expenses management to be among the main contributors to poor operational self-sufficiency. The regression result of the analysis indicates that average loan balance per borrower (ALBPB), size of microfinance institutions and the yield on gross loan portfolio

positively affects the operational sustainability of microfinance institutions in India significantly. These variables affect the operational sustainability significantly at 5 per cent, 1 per cent and 1 per cent significance level, respectively. The increase in loan per borrower, an increase in the total asset (a proxy for the size of an MFI) and the yield on the gross loan portfolio increases the operational sustainability of microfinance institutions in India. The yield on gross loan portfolio indicates the ability of an MFI to utilise the short term assets to generate cash financial revenues. Therefore, the more an MFI utilises its short-term assets, the greater it generates higher financial revenues, which on the other way round, cause higher sustainability. This can be further elaborated as, since the higher the ratio

the better the operational sustainability of an MFI is, the MFI should utilise its resource to the maximum possible level so as to increase the financial revenue in the form of interests, fees, penalties and commissions from the gross loan portfolio.

In this study, cost per borrower (CPB) is found to be strongly and negatively affecting the operational self-sufficiency of microfinance institutions. This variable is significant at 1 per cent significance level. The cost per borrower measures the MFI's effectiveness in cost reduction given the number of borrowers it is serving. This implies the role of cost reduction in improving the operational sustainability. Personnel productivity (PP) ratio is negative but insignificant.

The coefficient of debt/equity ratio (DE) is negative and statistically significant ( $P > Z = 0.039$ ). This may be due to the fact that MFIs (e.g. those in India) do not pay dividends and this makes equity a relatively cheap source of finance compared to debt financing. A number of studies provide empirical evidence supporting this negative relationship between debt level and firm's performance or profitability. The coefficient of gross loan portfolio to asset ratio (LTA) is positive and statistically significant at the 5 per cent level. This shows that operational sustainability is

positively and significantly influenced by the ratio of gross loan portfolio to total asset. The gross loan portfolio is the main source of income to an MFI and thus, other things being constant, the higher the loan, the higher the interest revenue and profits. The coefficient of portfolio at risk (PAR) is negative which is consistent with the hypothesis. The result is statistically significant at 5 per cent level. This result may be explained by considering the fact that the more MFIs are exposed to credit risk, the higher is the accumulation of unpaid loans and lost interest income which reduces financial sustainability of MFIs. As expected, the deposit /asset ratio is positively related to financial sustainability. However, the result is not statistically significant since p-value is greater than 10 per cent. In addition, the results revealed that there is a trade-off between breadth of outreach (LNNB) and financial sustainability, though the result is not statistically significant. Finally it is found that size is positively and significantly ( $P > Z = 0.054$ ) related to operational self-sufficiency which may be due to economies of scale.

The study has also found that new and young MFIs have negative impact on operational sustainability. Positive significance of the dummy for NBFC indicates that legal status of the MFIs also has an important role in determining the operational sustainability of MFIs.

**Table 3: Determinants of Operational Sustainability of MFIs in India: Probit Regression Results**

	Coefficient	P value
OETA	-0.06	0.00
LNTA	0.56	0.05
DE	-0.11	0.02
PAR	-0.56	0.04
LNNB	-0.37	0.179
LTA	0.21	0.07
DTA	0.002	0.34
Yield	0.11	0.00
CPB	-9.07	0.04
PP	0.11	0.11
ALBPB	0.03	0.03
Dummy new	-0.05	0.05
Dummy young	-0.06	0.02
Dummy NBFC	0.07	0.06
Constant	-4.98	0.00
Number of observations	403	

### Conclusion

This study examined the determinants of operational sustainability of Indian MFIs. Unbalanced panel data for 65 MFIs consisting of 403 observations, covering the period 2005 – 2013, provided the basis for the econometric analysis. The results indicate that MFIs' operational sustainability is positively and significantly influenced by the ratio of gross loan portfolio to total asset and size. Management inefficiency measured by

operating expenses /asset ratio and credit risk measured by PAR > 30 days are found to have a negative and significant impact on operational sustainability of MFIs. Therefore, by influencing these factors, an MFI is able to improve its operational sustainability. Thus, management efficiency, loan intensity, portfolio at risk, and size are important determinants of MFIs' operational sustainability in India. In general, older MFIs may be more experienced due to learning-

curve effects resulting from trial-and-error processes. This study also found that new and young MFIs reduce the operational sustainability of MFIs. The study has found that NBFC had a positive significant impact on the operational sustainability of the MFIs in India. This study recommends microfinance institutions to increase their economies of scale which will further reduce the cost per borrower. MFIs should be trained to use more short-term assets to generate more cash and financial revenues, and increase the loan size, and finally it has been recommended that they should increase the value of their total assets.

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