Determinants of Financial Performance of the Microfinance Institutions in Tamil Nadu

S. Padma Rani [aφ*], K. Nithyavathi [a], A. Vidhyavathi [a], S. Hemalatha [b] and M. Prahadeeswaran [a]

[a] *Department of Agricultural Economics, Tamil Nadu Agricultural University, Coimbatore 641003, India.*
[b] *Department of Agricultural Rural and Management, Tamil Nadu Agricultural University, Coimbatore 641003, India.*

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Original Research Article

ABSTRACT

Aims: To study and analyze the major determinants of financial performance of the microfinance institutions in Tamil Nadu.
Study Design: Purposive Random Sampling method was used. Both primary and secondary data was used for the analysis.
Place and Duration of Study: In Tamil Nadu, Coimbatore district was purposively selected for the study. Survey was conducted for the collection of primary data pertaining to the period of 2021-22 and also secondary data was collected for the period of 2010-2019 from the Microfinance Information Exchange Market.
Methodology: The secondary study is based on unbalanced panel data consists of 10 major Microfinance institutions in Tamil Nadu, out of around 25 microfinance institutions. To study the major determinants of financial performance of the 10 microfinance institutions in Tamil Nadu panel regression (fixed and random effect model) technique was employed. In addition, to analyze the general characteristics and constraints the percentage analysis and Garrett ranking technique was employed respectively.

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[φ]*Associate Professor;*
Corresponding author: E-mail: padmaranisenthil@yahoo.com;

Results: The results of the study revealed that financial indicators such as operating self-sufficiency, Return on Assets, and Assets had a positive impact on increasing the performance of MFI. According to the panel regression, Debt-Equity Ratio, Number of Active Borrowers, Percentage of Women Borrowers, Operating Expenses to Asset ratio and Total Equity to total Asset are statistically significant in the model and suggesting the improvement in the Microfinance loan and building of training facilities.

Conclusion: This study shows that the majority of the respondents depend on MFIs are females than males, and most of the beneficiaries were in the middle age group of 30-40 years old who preferred to approach the MFI for getting loans. The results specified Operating Self Sufficiency is positively and significantly related compared to Return on assets and Asset value.

ABBREVIATIONS

OSS : Operating Self Sufficiency
ROA : Return on Asset
DER : Debt to Equity Ratio
PW   : Percentage of Women Borrowers
OEA : Operating Expenses to Asset Ratio
ALB : Average Loan Balance
NAB : Number of Active Borrowers
TETA : Total Equity to Total Asset Ratio
MFI   : Microfinance Institutions

1. INTRODUCTION

Microfinance is a relatively new financial institution. Microfinance is often known as "the poor's bank." The issue of reliability lies at the heart of financial institutions [1]. Micro finance also known as microcredit, is a type of banking service provided to unemployed or low-income individuals or groups who otherwise would have no other access to financial services. The taskforce on Supportive Policy and Regulatory Framework for Microfinance constituted by NABARD defined microfinance as "the provision of thrift, saving, credit, and financial services and goods to the poor in rural, semi-urban, and metropolitan regions in order to help them and improve their income and living standards" [2,3]. Dr. Mohammad Yunus initiated loaning money during famine in Bangladesh in 1976, and the Self-Employed Women's Association of India was founded in 1974, bringing microfinance into the spotlight [4].

According to the World Bank, India is around a third of the world's poor. India is the world's second most populous country following China. Because 70% of the population lives in rural regions and agriculture is their major source of income, the unemployment rate is higher [5]. Despite the fact that microfinance has grown significantly in recent years and measured performance using financial ratios such as return on assets and equity and identified factors that influenced these indicators [6,7]. The researchers started by examining the performance, growth, financial viability, profitability, efficiency, and capital structure of MFIs all around the world [8,9,10]. MF institutions do not care about the ethical and moral norms of the poor. Borrowed money is usually spent for their needs such as the marriage of their children and repairing of houses etc. Therefore, proper supervision is needed to create the sense of ethical and moral values and also need to peruse them to use loans only for earning activities [11,12].

Reaching out to the poor is typically more expensive than providing financial services through traditional commercial banks, which specialise on serving more wealthy clients. Furthermore, individuals frequently lack collateral to pledge when receiving a loan, thus increasing the risks. Despite the fact that MFIs have developed strategies to lower these costs (e.g., by offering group loans, making borrowers jointly responsible for the repayment of individual loans) [13,14]. Non-financial services provided through microfinance plus activities include social services, business development services, and technical assistance. Credit is combined with agriculture, education training, or other programme aimed at increasing awareness, practical applications in social services. Financial literacy training, management or occupational skills training, marketing, product creation, and accounting and legal services are all examples of business development services. Technical assistance varies from business services in that it focuses on the creation of goods and services rather than on the management of those operations [15].

Most prior studies focused on examining factors of MFI performance as well as diverse indicators of sustainability, efficiency, and outreach, but there is very little research that rates MFI performance. The gap also exists in analysing MFI performance just on the basis of efficiency measures, which does not provide a comprehensive picture. Many studies have found that microfinance is an effective technique for overcoming poverty [16,17,18]. However, there are just a few studies in India that look into the financial performance of Microfinance Finance Institutions [19]. This study is to examine the major determinants of financial performance in Tamil Nadu.

2. METHODOLOGY

Both primary and secondary data have been employed in this study. The primary data was collected from 30 sample beneficiaries of microfinance institutions and the data for analysis included age, education, gender, occupation, source of income and purpose of loan borrowed. The data pertained to the period of 2021 - 2022 was collected by a primary survey in sample district during February to March 2022. This research also used secondary panel data such as operational self-sufficiency (OSS), Return on assets (ROA) and Assets (AS) as financial performance indicators, i.e., dependent variables and independent variables are Debt-to-Equity ratio, Number of active borrowers, Average loan Balance, Percentage of women Borrowers, Operating Expenses to Asset ratio and Total Equity to Total Asset ratio was collected from the MIX market during the year 2010-2019.

2.1 Sampling Design and Method of Data Collection

The secondary data was collected from the Microfinance Information Exchange market (MIX market). As of November 2021, around 250 Indian Microfinance institutions reported data to the MIX. However, data provided by these institutions was incomplete. We have selected those institutions which report at least 10 years data from the period 2010 to 2019 to MIX database. For this study, 10 microfinance institutions were chosen and was presented in Appendix A. Therefore, on the basis of size of the sample and time period, data of unbalanced panel data with 100 observations have been used for this study [20].

For the primary survey, Coimbatore is one of the significant developing MFI's areas. Hence, Coimbatore district was purposively chosen for the study. In Tamil Nadu, approximately 25 MFIs were there. In Coimbatore district, three branches of Equitas Small Finance Bank were randomly selected, in each branch 10 respondents were selected which comprises of totally 30 respondents and contacted for the survey using well- structured questionnaire.

2.2 Method of Data Analysis

The study attempts to address the major determinants of financial performances of microfinance institutions in Tamil Nadu.

2.2.1 Percentage analysis

Percentage analysis was used to study the general characteristics of the respondents which included age, education, gender, and occupation, source of income and purpose of loan borrowed. The percentage is calculated by dividing the number of respondents belonging to the particular category to the total number of sample respondents.

2.2.2 Panel unit root test

The present research work used unit root test (Levin, Lin and Chu [21]) to know the stationarity of the cross-sectional variables in the panel data set. The null hypothesis (H0) contains a unit root. The alternative hypothesis (H1) contains stationary. The asymptotic distribution of the Levin, Lin and Chu [21] was the same as the ADF test statistic, but they developed a statistical method that deals with the cross-sectional data discussed as under

$$\Delta Y_{i,t} = \theta_i + \emptyset Y_{i,t-1} \sum_{m=1}^{q_i} \beta_{i,m} \ \Delta Y_{i,t-z} + \mu_{i,t}$$

Δ is the difference parameters (i.e., $\Delta Y = Y_t - Y_{t-1}$, $Y_{t-1} = Y_{t-1} - Y_{t-2}$ and $Y_n = Y_n - Y_{n-1}$). The parameter θ_i is the intercept or drift, i = 1…, N and t = 1…, T, q is the number of lags length, and µi is the error term.

2.2.3 Econometric model

The specification was based on the data on MFI performance determinants. Three equations from the random and fixed-effect models were found in the identified models. These models consisted of three equations of fixed effect and random effect model.

$$OSS_{nt} = \alpha + \beta_1 DER_{nt} + \beta_2 OEA_{nt} + \beta_3 PW_{nt} + \beta_4 AVL_{nt} \\ + \beta_5 TETA_{nt} + \beta_6 NAB_{nt} \\ + \beta_7 ASSETS_{nt} + \mu_{nt}$$

$$ROA_{nt} = \alpha + \beta_1 DER_{nt} + \beta_2 OEA_{nt} + \beta_3 PW_{nt} + \beta_4 AVL_{nt} \\ + \beta_5 TETA_{nt} + \beta_6 NAB_{nt} \\ + \beta_7 ASSETS_{nt} + \mu_{nt}$$

$$ASSETS_{nt} = \alpha + \beta_1 DER_{nt} + \beta_2 OEA_{nt} + \beta_3 PW_{nt} \\ + \beta_4 AVL_{nt} + \beta_5 TETA_{nt} + \beta_6 NAB_{nt} \\ + \mu_{nt}$$

Where, n = 1…. P, T= 1…T, n is an n number of the observations and t is the time, α is a constant and all β's (from all the three equations) are the coefficients β1 to β6 of explanatory variables [22]. The determinants of MFI performance were determined using the three-panel random and fixed effect equations. However, accurate diagnosis of nature and structure is essential. As a result, the performance of MFIs was influenced.

2.2.4 Garrett ranking technique

The study employed Garrett's ranking technique to prioritize major constraints faced by member-respondents, officials and suggestions from member-respondents, officials.

Garrett formula for conversion of ranks into percentage can be given by,

Percent Position = [100 (Rij – 0.50)]/ Nj

Where,

Rij = Rank proposed for i[th] category by j[th] respondent
Nj = Total number of constraints/suggestions ranked by j[th] respondent

3. RESULTS AND DISCUSSION

3.1 Descriptive Statistics of the Selected Variables

Descriptive statistics of all the variables analyzed in this study influencing the factors affecting the operational self-sufficiency are presented in Table 1. A mean value of OSS is 120 percent on an average. So, MFIs on average, did not require any outside support for their financial sustainability. The minimum value of OSS is 0 shows that non-sustainability of MFI and the maximum value is 174 percent reveals that the higher sustainability. Further, on an average participation of women in MFI's is 72 percent which shows that participation was higher in the studied MFIs. Further, the mean value of ROA was low indicated that all MFIs, on average, operate on low profits against the investments but losses on institutions does not occur. The average operating expenses to total assets ratio (OEA) was 8 per cent, which indicated that, on average, MFIs had minimized the operating costs to yield positive returns. Total Equity to Total Assets Ratio (TETA) was calculated to be 0.26 shows that the average equity level to the asset was only 56 per cent.

The results of the correlation coefficient matrix to determine the relationship between the explanatory variables in the models it enables to detect the problem of multicollinearity. If the correlation value exceeds a certain limit that is 0.8 to 0.9, there occurs a problem. The results of correlation analysis in Table 2 indicated most of the variables are negative in nature.

Table 1. Descriptive statistics of the selected variables

Variables	Observations	Mean	Std. Dev.	Minimum	Maximum	CV (percent)
OSS	100	120.36	27.80	0.00	174.1	23.10
ROA	100	1.98	5.64	-46.74	8.47	285.18
PW	100	72.30	43.47	0.00	100	60.12
DER	100	3.61	1.89	0.00	9.13	52.46
ALB	100	164.39	81.54	0.00	367	49.60
OEA	100	8.12	3.77	0.00	23.4	46.43
TETA	100	0.26	0.13	0.08	0.60	48.82
ASSETS	100	18.86	1.78	15.34	22.8	9.42
NAB	100	12.00	4.25	0.00	15.7	35.41

Table 2. Correlation matrix of the selected variables

Variables	OSS	ROA	DER	PW	ALB	OEA	TETA	ASSETS	NAB
OSS	1								
ROA	0.608	1							
DER	0.145	0.032	1						
PW	0.071	0.144	-0.017	1					
ALB	-0.167	0.103	0.188	0.250	1				
OEA	-0.253	-0.252	-0.207	0.027	-0.129	1			
TETA	0.003	-0.016	-0.818	0.090	-0.246	0.213	1		
ASSETS	0.125	0.033	0.545	-0.402	0.043	-0.250	-0.631	1	
NAB	-0.175	-0.089	0.011	0.468	0.740	0.039	-0.070	-0.196	1

Using the panel regression random effect model, a significant effort was made to characterize the performance of MFIs and levin, Lin and Chu unit root test has been employed on the panel data for checking stationarity of the data and as per Table 3, the results reveal that value of t-statistics is significant for all the data series except percentage of women borrowers, average loan balance, assets and number of active borrowers.

3.1.1 Panel regression

The STATA 15 software is used to assess the panel regression and results of the OLS regression are summarized in Table 4 where Operating Self Sufficiency considered as dependent variable remaining other variables considered as explanatory variables. The results indicated that the coefficients of Debt-to-Equity Ratio and Total Equity Total Asset are highly significant than Operating Expenses to Asset and Percentage of Women borrowers are significant in the fixed effect model. In addition to the coefficient of independent variables like Debt Equity Ratio (10.34), Percentage of Women borrowers (0.14), Average Loan Balance (0.043),

Total Equity to Total Asset (23.77) is positively related except Operating Expenses to Asset (-2.32), Assets (-1.379) and Number of Active Borrowers (-2.019) are negatively related. The R^2 signifies that 25.9 per cent of variation in the overall performance score has been explained by the independent variables.

It could be seen from the Table 4 Debt-to-equity ratio, Operating expenses to asset ratio and percentage of women borrowers are significant and total equity to total assets is highly significant. Moreover, the coefficient of explanatory variables like Debt Equity Ratio (5.99), Percentage of Women borrowers (0.13), Total Equity to Total Asset (112.77) and Assets (3.53) are positively related except Operating Expenses Asset ratio (-1.68), Average Loan Balance (-0.04) and Number of Active Borrowers (-0.55) which are negatively related in the random effect model. The R^2 signifies that 19.3 per cent of variation in the overall performance score has been explained by the independent variables. In the study conducted by Nyamsogoro [18] findings revealed that the ratio of operating expense to the asset was also negatively associated with financial sustainability.

Table 3. Results of the unit root test

Variables	t-Statistics	Remarks
Return on Asset	-3.94 ***	Stationary
Operational self Sufficiency	0.00**	Stationary
Debt to Equity Ratio	-5.49***	Stationary
Percentage of Women Borrowers	-1.1	Stationary
Average Loan Balance	1	Stationary
Operating Expenses to Asset	-6.01***	Stationary
Total Equity to Total Asset	-6.89***	Stationary
Assets	-2.64**	Stationary
No. of Active Borrowers	-0.72	Stationary

*** Significant at the 1% level*

Table 4. Results of the fixed and random effect model on OSS as dependent variables

Fixed Effect Model			
OSS	**Coefficient**	**Std. Err.**	**P value**
DER	10.34844***	2.806	0.000
PW	0.14668*	0.083	0.083
ALB	0.043	0.074	0.564
OEA	-2.320**	1.056	0.031
TETA	230.77***	54.281	0.000
ASSETS	-1.379	3.969	0.729
NAB	-2.019	1.445	0.166
Constant	75.180	79.438	0.347
R^2 overall	0.259		
F statistics	4.15***		0.000
Random Effect Model			
OSS	**Coefficient**	**Std. Err.**	**P value**
DER	5.996**	2.473	0.015
PW	0.136*	0.076	0.074
ALB	-0.049	0.053	0.361
OEA	-1.682**	0.768	0.029
TETA	112.77***	41.74	0.007
ASSETS	3.535	2.318	0.127
NAB	-0.550	1.091	0.614
Constant	21.545	54.229	0.691
R^2 overall	0.193		
F-Statistics	22.39***		0.002
Hausman test	19.64		

***, ** and * Significance level at 1%,5% and 10% respectively.

It could be seen from the Table 5 the regression results of Return on Asset as the dependent variable. Percentage of Women borrowers, Average Loan Balance, Number of Active Borrowers are highly significant and Operating Expenses to Asset ratio, Total Equity to Total Asset are statistically significant in the fixed effect model. With the exception of Operating Expenses to Asset ratio, Assets and Number of Active Borrowers, all explanatory variables like Debt-to-Equity Ratio (0.42), Percentage of Women borrowers (0.04), Average Loan Balance (0.05), Total Equity to Total Asset (20.9) are positively related shows the good performance of the microfinance. The percentage of female borrowers, average loan balance, operating expenses to assets ratio, and number of active borrowers are statistically significant in the random effect model. Furthermore, explanatory variables such as Percentage of Women borrowers (0.03), Average Loan Balance (0.02), Total Equity to Total Asset (1.49) and Assets (0.15) have positive coefficients indicated that performance of these variables are good in the institutions.

Table 6 shows that results of the regression, in fixed effect model using assets as the dependent variable showed that Debt to Equity Ratio,

Average Loan Balance, Operating Expenses to Asset ratio, and Number of Active Borrowers are highly significant. with the exception of PW, OEA, and NAB all explanatory variables are positively related. The R^2 signifies that 22.3 per cent of variation in the overall performance has been explained by the explanatory variables.

Debt-to-Equity ratio, Average Loan Balance, Operating Expenses to Assets ratio and Number of Active Borrowers are statistically significant in the random effect model. The R^2 signifies that 62.4 per cent of variation has been explained by the independent variables. Further the coefficients of explanatory factors like DER, AVLB and TETA are positively connected and other explanatory variables are negatively related. The positively related coefficients shows that the microfinance institutions have worthy performance. The Hausman test was used to determine if the random and fixed-effect models differed significantly. The Hausman test examined the null hypothesis that the random and fixed-effect models were identical. The null hypotheses were rejected in all three models in our case, showing that the fixed effect model was more appropriate and preferred to the random effect model. The F-Statistics showed overall significance of the model were significant.

Table 5. Results of the fixed and random effect model on ROA as dependent variables

Fixed Effect Model			
ROA	**Coefficient**	**Std. Err.**	**P value**
DER	0.422	0.603	0.48
PW	0.048***	0.017	0.00
ALB	0.051***	0.015	0.00
OEA	-0.398*	0.227	0.08
TETA	20.963*	11.669	0.07
ASSETS	-0.743	0.853	0.38
NAB	-1.023***	0.310	0.00
Constant	12.586	17.077	0.46
R^2overall	0.111		
F-Statistics	3.34		0.00
Random Effect Model			
ROA	**Coefficient**	**Std. Err.**	**P value**
DER	-0.215	0.501	0.668
PW	0.039**	0.015	0.011
ALB	0.027**	0.010	0.010
OEA	-0.298	0.149	0.046
TETA	1.491	8.240	0.856
ASSETS	0.159	0.444	0.720
NAB	-0.664***	0.215	0.002
Constant	2.467	10.615	0.816
R^2 overall	0.178		
F-statistics	19.97		0.00
Hausman Test	13.57		0.05

***, ** and * significance level at 1%,5% and 10% respectively

Table 6. Results of the fixed and random effect model on asset as dependent variables

Fixed effect model			
ASSETS	**Coefficient**	**Std. Err.**	**P value**
PW	-0.002	0.002	0.342
DER	0.268***	0.071	0.000
ALB	0.009***	0.001	0.000
OEA	-0.106**	0.026	0.000
TETA	2.249	1.471	0.130
NAB	-0.189***	0.033	0.000
Constant	19.120	0.644	0.000
R^2overall	0.223		
F-statistics	23.80		0.000
Random effect model			
ASSETS	**Coefficient**	**Std. Err.**	**P value**
PW	-0.002	0.002	0.234
DER	0.252***	0.072	0.000
ALB	0.008***	0.001	0.000
OEA	-0.099***	0.026	0.000
TETA	1.420	1.463	0.332
NAB	-0.182***	0.034	0.000
Constant	19.357	0.760	0.000
R^2overall	0.624		
F-statistics	137.94		0.000

***, ** and * significance level at 1%,5% and 10% respectively.

3.1.2 General characteristics of the respondents

Based on the primary survey data for which analysis included age, education, gender, occupation, source of income and purpose of loan borrowed by percentage analysis and presented in the following table. From the Table 7, the distribution of the sample respondents on the age reveals that 43 percent of the respondents is in 31-40 years of age group, followed by 30 percent in 41-50 years, 20 percent in 21-30 years and 7 percent in above 50 years age group. It indicates that the majority of the MFI loan beneficiaries are in the middle age group.

Educational level of the MFI beneficiaries was presented in the Table 8. The results shows that the majority of them (33 percent) had secondary level of education 30 percent had primary education and 17 percent had Higher secondary level of education. It shows that the majority of the respondents undergone primary and secondary level of education. The results of Table 9 revealed that that among the borrowers, 80 percent of them are women and 20 percent are men those who availed MFI loans.

Microfinance institutions lend to the poor people who have income of less than 3 Lakh per annum and majority of the respondents were obtained the source of income from the Agricultural and allied activities by 40 percent followed by shop of 27 percent and others like wage earners, construction workers etc., of 23 percent from the Table 10.

Majorly the Micro finance institutions provide loans for productive purposes like income generating activities and diversified their loans for unproductive purpose like Education purpose.

Table 7. Age of the sample respondents

Particulars	Number	Percentage
21-30 Years	6	20
31-40 Years	13	43
41-50 Years	9	30
Above 50 Years	2	07
Total	30	100

Table 8. Education of the respondents

Particulars	Number	Percentage
Illiterate	4	13
Primary	9	30
Secondary	10	33
Higher Secondary	5	17
Degree	2	07
Total	30	100

Table 9. Gender of the respondents

Particulars	Number	Percentage
Male	6	20
Female	24	80
Total	30	100

Table 10. Source of income of the respondents

Particulars	Percentage	Number
Agricultural &allied activities	40	12
Business	10	3
Shop	27	8
Others	23	7
Total	100	30

Table 11. Purpose of loan borrowed

Particulars	Number	Percentage
Business	7	23
Agricultural production	8	27
Petty shop	6	20
Purchase of cattle	7	23
Others	2	07
Total	30	100

From the Table 12, Out of 30 respondents, 15 respondents diversified the loan amount for education purpose by 27 percent and repayment of debt of 20 percent. Due to the diversification, repayment was not affected and repaid their dues through the income of the daily wage earners. During the COVID pandemic, the Reserve Bank of India imposed a three-month "Moratorium period," even though the debt could not be repay and cannot be recognized as a non-performing asset.

From the results of Table 13, it could be observed that, all the sample respondents borrowed the first loan amount of Rs. 35,000, and 20 percent of them availed a second loan amount of Rs. 40,000 and only 7 percent of the respondents had availed third loan of Rs. 50,000. In the study area, Equitas small finance banks provide MFI loans without collateral security upto 50,000 at the interest rate of 23 percent.

3.1.3 Constraints and Suggestions given by the respondents and officials

From the Table 14 the majority of sample borrowers highlighted the limitation of offering an inadequate amount as well as high interest rates (40 percent) as the most significant constraints.

From the Table 15, increase in the amount of the loan without collateral, establishment of training facilities and promoting MFI loans is needed and suggestion were made by the respondents.

3.1.4 Constraints and Suggestions given by the officials

From the Table 16 & Table 17 revealed that the officials engaged in MFI loan funding section said that, lack of awareness of institutions among the

Table 12. Diversification of loan amount

Particulars	Number	Percentage
Education	8	27
Repaying of debt	7	20
Total	15	47

Table 13. Details of amount of loan borrowed

Particulars	1st Loan	2nd loan	3rd loan
Availed loan	30(100)	6(20)	2(7)
Not availed loan	00	24(80)	28(93)
Total	30(100)	30 (100)	30(100)

Table in the parenthesis () indicates the percent to the total

Table 14. Constraints faced by the Respondents in functioning of MFI

S. no	Constraints	Mean Score	Rank
1	Inadequate loan amount	70	I
2	Lack of Self Confidence	67	II
3	Lack of Training Facilities	46.3	III
4	High Interest Rate	40.16	IV
5	Lack of Administrative Experience	28.5	V

Table 15. Suggestions given by the respondents

S. no	Suggestions	Mean Score	Rank
1	Increase Loan Amount	73.5	I
2	Reduction In Interest Rate	57.6	II
3	Awareness of the Loans/Schemes	55.8	III
4	Buildings of Training and Capacity	34.5	IV
5	Lack of Cooperation Among Members	30.5	V

Table 16. Constraints faced by the officials

S. no	Constraints	Mean Score	Rank
1	Lack of Publicity of Institutions to Rural People	23.2	I
2	Lack of Financial Literacy Among the Members	19.2	II
3	Inability to Monitor the Usage of Loans Properly	12.86	III
4	Problems In Repayment Recovery	12	IV

Table 17. Suggestions given by the Officials

S. no	Suggestions	Mean Score	Rank
1	Regular Meetings and Awareness	68.2	I
2	Educating Financial Literacy	61.8	II
3	Capacity Building to The Staff	26.4	IV
4	Imparting Training to the beneficiaries	34.4	III

rural people compared to urban people, a lack of financial literacy, and issues with loan recovery were the key obstacles. For the enhancement of MFI institutions, meetings for support of entrepreneurial activity for women borrowers, financial literacy education, and capacity building training for the staff were needed for strengthening Micro finance institutions.

4. CONCLUSION

This study used panel data from 2010 to 2019 for 10 microfinance institutions to examine their determinants of financial performances of MFI in Tamil Nadu. For the present study, random effect model is preferred instead of fixed effect model based on the hypothesis testing and Hausman test. Our findings revealed that MFIs 'Operating Self Sufficiency is much higher than Return on Assets and Assets. The positive relationship between the coefficients of explanatory factors such as average loan balance, debt to equity ratio, and total equity to total asset ratio, as well as the percentage of women borrowers, indicates that MFIs have higher influences on financial performances. Other explanatory variables that are negatively related to good performance of microfinance institutions include operating expenses to assets ratio and number of active borrowers.

Due to the lack of annual financial information and hence missing information in the mix database for a significant number of NBFC-MFIS, the original study major weakness is the small sample size of MFIS. According to the findings of primary survey, females are more likely to participate than males to support MFIS, and those in the 30-40 age group are more likely to seek MFI loans without any collateral security. The majority of the loans were utilized for education purposes, followed by business and livestock purchases. Borrowers rely heavily on agriculture and related businesses to pay back their loans. We need to pay attention to rural active borrowers than urban borrowers, then they increase the performance of institutions.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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APPENDIX A

Institutions	Head office	Branches in Tamilnadu	Year of establishment
Bandhan	Kolkata	Chennai, Coimbatore, Erode, Kanchipuram, Kanyakumari, Madurai, Salem, Trichy and Vellore	2001
Ujjivan	Bengaluru	Coimbatore, Cuddalore, Dharmapuri, Dindigul, Nagai, Erode, Nilgiris, Namakkal, Theni, Tirupur, Virudhunagar etc.,	2004
Equitas	Chennai	Ariyalur, Coimbatore, Erode, Tirupur, Villupuram, Trichy, Sivagangai, Thrivallur	2007
Bharat financial	Hyderabad	Coimbatore, Vellore, Trichy, Erode	1997
Madhura	Chennai	Cuddalore, Ariyalur, Dharmapuri, Dindigul, Karaikal, Thothukudi etc.,	2005
Asirvad	Chennai	Chennai, Madurai, Coimbatore, Tirunelveli, Trichy, Vellore	2007
Sarvodaya nano	Chennai	Chennai, Coimbatore, Tirupur, etc.,	2003
Satin	Gurugram	Chennai, Madurai, Coimbatore, Tirupur	1990
Smile	Chennai	Chennai, Madurai, Kodaikanal	2005
Suryoday	Maharashtra	Chennai, Coimbatore and Trichy	2009