Financial Sustainability of Microfinance Institutions : Evidence from India

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Abstract

Purpose : The study aimed to analyze the financial sustainability of microfinance institutions (MFIs) and identify the factors that affected the financial sustainability measures in the presence of the social goal of achieving maximum outreach.

Methodology : The study was based on 30 MFIs that were active in India between 2010 and 2019. Financial sustainability was the dependent variable in the study, and it was assessed using three proxies: PRM, operating self-sufficiency, and return on asset. The independent variables were the total loan portfolio, operational expense ratio, loan loss rate (LLR), debt-to-equity ratio, cost per borrower (CPB), and average loan balance per borrower to GNI per capita. The EViews student version was used to analyze panel data using *t*-test, ANOVA, correlation, and regression.

Findings : The study's outcome reflected that almost all the explanatory variables significantly affected financial sustainability during the study period. Two factors, i.e., debt-equity and operating expense ratios, displayed outcomes contrary to expectations. It was also discovered that MFIs must strike a balance between depth of outreach and financial sustainability.

Practical Implications : According to the report, profit nature and non-banking financial institutions, MFIs must improve their financial viability. Furthermore, these institutions must keep their CPB as low as feasible, extend their operations, i.e., lending levels, and keep their LLR as low as possible by personalizing their goods. They also wanted to guarantee that their outreach was both deep and broad.

Originality : This study was pertinent because there haven't been many studies on MFIs in India recently. Additionally, this study considered CPB and average loan balance per borrower, two less-studied variables.

Keywords : **financial sustainability, microfinance institutions, operating self-sufficiency, depth of outreach**

JEL Classification Codes : G20, G21, G29, O10

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India is one of the most rapidly developing nations in the world. One of the key elements behind such massive growth potential is the extensive support of microfinance institutions (MFIs) in helping the financially backward class to stand on their own feet and attain financial independence. MFIs are like a vaccine to control and alleviate India's biggest hindrance in attaining its growth potential, i.e., poverty. Abdulai and Tewari (2016) identified in their study that countries having large MFIs have been able to lower their poverty levels. Diro and Vadde (2014) revealed that receivers of microloans have shown significant improvement in their household

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income, savings, and expenditure. India is the world's second-most populous nation, with most of its citizens residing in metropolitan areas and experiencing underemployment, which further contributes to the country's low per capita income. MFIs are essential in changing the lives of rural residents and small company owners by assisting them in realizing their entrepreneurial aspirations. Access to standardized credit is a significant issue for people in rural India. MFIs have made it their mission to close this gap and contribute to developing an independent and prosperous country.

MFIs are already being popularized as a major source of credit for small borrowers like small farmers, self-employed, seasonally employed women, etc. Their ability to offer specialized financial products and services to the disadvantaged segment of society can be used to understand their popularity (Yunus, 2008). They differ from formal sector banks as they do not rely only on deposits for funds. They also indulge in non-credit services like marketing and vocational training. They also differ from development banks in that they base their credit operations on the market rather than concentrating on a specific industry. MFIs are unique because they can have both a profit-making and a non-profit purpose. While some studies (Morduch, 2000) showed social MFIs to be less effective than profit MFIs, other studies (Hudon & Traca, 2011) indicated the opposite.

The importance of MFIs to a country's overall growth and sustainability is the primary driving force for this study. They are one of the foundational elements of India's overall start-up ecosystem. It has become an essential source of microcredit for start-up small businesses. The exigency and the magnitude of the social movement that the microfinance industry is running have raised concerns regarding the financial sustainability of these microfinance institutions. MFIs are having trouble sustaining their financial viability, according to studies by Christen et al. (1995), Schreiner (2000), and Woller (2000).

Additionally, Randhawa and Gallardo (2003) proposed that MFI viability requires ongoing support from the government. Analysis of the financial viability of MFIs in India is therefore crucial. Much research has been done; however, the results have varied (Christen et al., 1995; Cull et al., 2007). This lack of consistency is another major driving force behind the creation of this study.

Literature Review

With respect to the microfinance industry, sustainability can be defined as the ability of MFIs to cover all types of costs, like operating costs, administration costs, funding costs, and default costs, out of their operations. According to Dunford (2003), the ability of the microfinance institution to accomplish its goals without assistance from the government or outside donors is a measure of its financial sustainability. Financially unsustainable institutions failed to meet their goals and were losing money. Additionally, profit-making MFIs that heavily depended on contributions and subsidies from the government and other sources to pay their operational expenses were also considered unsustainable financially (Hossain & Khan, 2016). Singh and Bhar (2015) identified the lack of appropriate cash management among MFIs as a key cause of deficient performance. They proposed a decision support system for cash management in MFIs. According to Bhatt et al. (2020), information and communication technology may help the microfinance sector work more effectively and play a catalytic role in achieving its economic and social goals. A high repayment rate was one of the fundamental characteristics of the microfinance industry since the financial products of MFIs were tailored to the requirements and capacities of their clients (Yunus, 2008). Donations and subsidized have been excellent support for the sustenance of the microfinance industry. However, such external financial support is insufficient to maintain sustainability, given the industry's urgent need for growth and expansion (D'Espallier et al., 2013). In addition, Schreiner (2000) found that institutions that depended significantly on donations and subsidies vanish when the funds run out.

Many studies have tried to analyze the financial sustainability of MFIs in the past decade or two with an intent to identify how it could be improved and what measures needed to be taken into account to achieve such a goal (Chikaza, 2015; Hermes et al., 2011; Kaur, 2014; Nurmakhanova et al., 2015). Studies have also shown that

different countries have different levels of relevance for specific characteristics (Tehulu, 2013). Quayes (2015), in its cross-country study, revealed that loan portfolio, expense ratio, and loan loss reserve significantly impacted financial sustainability measures. Mahapatra and Dutta (2016) found that the size of MFIs, cost per borrower (CPB), and yield significantly affected operating self-sufficiency (OSS), recommending that MFIs increase their economies of scale. Naz et al. (2019) revealed that cost efficiency, portfolio at risk, and yield significantly impacted financial sustainability in Pakistan. In their study of MFIs in sub-Saharan Africa, Remer and Kattilakoski (2021) found that financial income/assets, the number of active borrowers, and the number of active borrowers/financial revenue are all essential variables. The report advised MFIs to employ cost-effective solutions.

The mission drift in the microfinance industry has also received considerable attention from previous academics. Numerous studies have shown that the dual objectives of the microfinance sector — i.e., its social objective of broader outreach and its financial objective of growth and sustainability — conflict. The microfinance sector first gave the impression that it wanted to help those who needed poverty. As a result, they view outreach as their primary goal (Copestake, 2007; Mersland & Strøm, 2010). However, the literature showed that many MFIs are found to be straying from their goal as the business attempts to achieve financial sustainability (Mersland & Strøm, 2010). This negative relationship between outreach and sustainability has resulted in a trade-off or mission drift, i.e., to attain financial sustainability. Instead of the impoverished, MFIs sought to help the poor (Awaworyi Churchill, 2020; Chowdhury, 2009). However, some studies also proposed contrary beliefs that outreach and financial sustainability were complimentary (Fernando, 2004; Makame, 2008; Morduch, 2005; Rhyne, 1998; Woller, 2007). They suggested expanding outreach will result in more customers and lower transaction costs. This would eventually assist in establishing financial sustainability.

The present study aims to fill this knowledge gap because the microfinance sector has received less attention in recent literature, particularly in India. Due to the discrepancies in the findings of earlier studies, the study is also pertinent. The study has made an effort to include elements that have received less focus but are just as significant as others.

Objectives of the Study

The following are the objectives of the study:

(1) Analyze the financial sustainability of MFIs in India.

(2) Investigate whether the financial viability of MFIs differs between various institutions categorized according to their legal and financial status.

(3) Determine and examine several elements that impact the financial viability of MFIs in India.

Methodology

Data and Type of Study

That is what secondary research is. The study covered 30 MFIs in India from 2010 to 2019. These MFIs are chosen based on the data's availability. No significant global financial disasters or crises might have threatened the financial viability of MFIs between 2010 and 2019. Consequently, the chosen study period was that one. The microfinance information exchange (MIX) market, a web-based open database on MFIs of different developed and developing countries, is used to obtain these data. The database contains various data, including variables related to the balance sheet, outreach, operations, etc. It was the most trustworthy and commonly used database for microfinance analysis.

Variables

The dependent variable of the study is financial sustainability. It is measured using three proxies, i.e., profit margin (PRM), OSS, and return on asset (ROA). PRM is computed by dividing net operating income by financial revenue. ROA is the percentage of after-tax operating profit and total assets. OSS represents the relationship between operational income and costs. It is computed by multiplying a microfinance institution's financial revenue by the total of its financial expenses, net impairment losses, and operations expenses. The most popular financial performance measures are ROA and PRM, while OSS is employed explicitly in the microfinance sector. The research reveals that the bigger the value, the better the sustainability position of microfinance institutions for each of the three financial performance criteria employed in the study.

The independent variables consist of gross loan portfolio (GLP), operating expense ratio (OER), loan loss rate (LLR), debt to equity ratio (DER), CPB, and average loan balance per borrower to GNI per capita (ALBG). The total principal balance due from all of the MFIs' active clients is known as the GLP. It is used to calculate, in US dollars, the size of a MFI. It is expected to positively impact the financial sustainability of an MFI, i.e., the higher the loan portfolio, the better the financial position. The OER is the percentage of operating expenses and total assets. It is expected to have an adverse impact on the financial performance of microfinance institutions.

The LLR is defined as the percentage of loans that are likely to default and consequently have a negative impact on the financial viability of MFIs. To guard against such uncertainties, MFIs typically set up loan loss reserves. It is anticipated that a higher DER will negatively affect the financial success of microfinance firms. Therefore, it is generally desirable that a MFI capital structure contains more equity than debt.

CPB is the average cost incurred by a microfinance institution per client. It is associated with the average loan balance per borrower. The average loan balance per borrower is a measure of the outreach of MFIs. It represents the loan allocation size of a microfinance institution. The percentage of loans that are most likely to default and, as a result, have a negative impact on the financial viability of MFIs is known as the LLR. CPB and average loan balance per borrower per GNP per capita are both understudied but crucial factors in the financial viability of MFIs. A summary of the factors used in the study is provided in Table 1.

One of the most crucial factors in figuring out financial sustainability is PRM. It prioritizes the MFI's revenue over its expense. Due to the significant minimum PRM value in the entire sample, Table 1 demonstrates that PRM is negative. The results show that MFIs experience significant losses totaling –1262.47% while making a PRM of 52.75%. A significant component in determining financial sustainability is OSS. The higher the OSS, the better the financial strength of MFIs. The OSS ranges from as high as 221.62 % to as low as 7.34%. The OSS mean and median values do not significantly differ from one another. ROA is an equally important component of MFI's

Table 1. ***Descriptive Statistics***

Variables	Observations	Mean	Median	Std. Dev	Maximum	Minimum
PRM	300	–2.040	12.555	93.184	52.75	–1262.47
OSS	300	112.863	114.355	25.104	211.62	7.34
ROA	300	0.596	2.15	8.449	11.81	–63.54
GLP	300	15.9	2.45	30.5	188	0.024
OER	300	10.759	9.18	7.164	63.71	1.29
LLR	300	1.257	0.085	6.565	92.11	–1.91
DER	300	3.891	3.605	10.756	43.17	–122.65
CPB	300	17.79	15	15.218	237	3
ALBG	300	11.530	10.875	3.962	24.75	3.83

financial stability. The lowest ROA number (–63.54%) raises some concerns about the financial stability of microfinance institutions. It suggests that MFIs with declining results must act quickly to maintain sustainability.

Statistical Techniques

The study uses panel data analysis to analyze the financial sustainability of MFIs in India. *T*-tests and ANOVA are utilized to determine whether there are significant differences in financial sustainability parameters between MFIs. Based on profitability and legality, MFIs are categorized. Autocorrelation among the independent variables is then determined using a correlation matrix to determine the link between the research variables. It was further confirmed using the variance inflation factor (VIF) test.

Panel data regression is used on 300 observations to identify the direction and the strength of the relationship between dependent and explanatory variables. The most appropriate choice of regression out of pooled, fixed effect, and random effect is made by running the redundant fixed effect test and the Hausman test. The three regression equations empirically investigated in the study are listed below :

$$PRM_i = \beta_0 + \beta_1 GLP + \beta_2 OER + \beta_3 LLR + \beta_4 DER + \beta_5 CPR + \beta_6 ALBG + \varepsilon_i \quad (1)$$

$$OSS_i = \beta_0 + \beta_1 GLP + \beta_2 OER + \beta_3 LLR + \beta_4 DER + \beta_5 CPR + \beta_6 ALBG + \varepsilon_i \quad (2)$$

$$ROA_i = \beta_0 + \beta_1 GLP + \beta_2 OER + \beta_3 LLR + \beta_4 DER + \beta_5 CPR + \beta_6 ALBG + \varepsilon_i \quad (3)$$

Analysis and Results

Financial Performance of MFIs Based on Their Legal Status and Profit Status

Table 2 shows the results of the ANOVA test, which is used to determine whether there is a significant difference in the financial sustainability of different microfinance organizations categorized based on their legal status.

Thirty MFIs are in operation, with 3 of them operating as banks, 20 as non-banking financial institutions (NBFIs), and 7 as non-governmental organizations (NGOs). Table 2 shows that banks and NBFIs have the lowest mean PRM, while NGO MFIs have the greatest. As many may have sustained sizable losses during the data period, the mean PRM of NBFI MFIs is negative. The same is true of operational self-sufficiency and ROA's result. The ANOVA test results show that only the ROA varies significantly between banks, NBFI, and NGO-status microfinance institutions. The results are insignificant in the case of PRM and OSS.

Table 2. ***ANOVA Test for Banks, NBFI, and NGO MFIs***

	PRM			***OSS***			***ROA***		
	Bank	**NBFI**	**NGO**	**Bank**	**NBFI**	**NGO**	**Bank**	**NBFI**	**NGO**
MFIs	3	20	7	3	20	7	3	20	7
Observations	30	200	70	30	200	70	30	200	70
Mean	8.022	–7.97	10.616	116.561	112.106	113.441	1.737	–0.285	2.626
F-statistic		1.228			0.433			3.435**	

Note. *, **, and *** denote significance at 1%, 5%, and 10% respectively.

The *t*-test results to determine whether there is a significant difference in the financial sustainability of various MFIs categorized according to their profit status are shown in Table 3.

Based on the profit status, the sample MFIs are classified into profit and non-profit MFIs. In the total sample

Table 3. *t-test Results Between Non-Profit and Profit MFIs*

	PRM		*OSS*		*ROA*	
	Non-Profit	**Profit**	**Non-Profit**	**Profit**	**Non-Profit**	**Profit**
MFIs	7	23	7	23	7	23
Observations	70	230	70	230	70	230
Mean	11.48	–5.976	113.55	112.675	2.641	–0.032
T-statistic	1.970**		1.969		1.968*	

Note. *, **, and *** denote significance at 1%, 5%, and 10% respectively.

of 30, there are 23 profit MFIs and 7 non-profit MFIs. According to Table 3, non-profit microfinance institutions have a higher mean value of financial sustainability criteria than their for-profit counterparts, suggesting they are more financially secure. The *t*-test result shows that PRM and asset return significantly differ between non-profit and profit MFIs. However, the results are insignificant in the case of OSS.

According to our analysis, NGOs and not-for-profit MFIs are superior in financial sustainability to the other MFIs. Others must, therefore, step up their game and pick up tips from their rivals.

Correlation

Table 4 provides the results of the correlation analysis between all the study variables.

Table 4. *Correlation Matrix and VIF*

	PRM	***OSS***	***ROA***	***GLP***	***OER***	***LLR***	***DER***	***CPB***	***ALBG***
PRM	1								
OSS	0.650*	1							
ROA	0.867*	0.807*	1						
GLP	0.035	0.090	0.048	1					
OER	–0.488*	–0.463*	–0.418*	–0.168*	1				
LLR	–0.353*	–0.340*	–0.524*	–0.0213	0.111***	1			
DER	0.217*	0.121**	0.236*	–0.0397	–0.031	–0.0922	1		
CPB	–0.717*	–0.370*	–0.453*	0.03805	0.658*	–0.0238	–0.01	1	
ALBG	0.05	0.237*	0.146**	0.501*	–0.195*	–0.116*	0.066	0.160*	1
VIF				1.35935	2.16214	1.04226	1.0191	2.1069	1.561

Note. *, **, and *** show that relationship is significant at 1%, 5%, and 10% respectively.

Table 4 demonstrates that the PRM positively correlates with OSS and ROA among the financial sustainability metrics. Additionally, there is a strong positive link between OSS and ROA. This shows that a decline in one metric will have a severe adverse effect on others. Significant relationships exist between PRM and the operational expense ratio, LLR, DER, and CPB. The operating expense ratio, LLR, and CPB all show a negative correlation, as would be predicted.

In contrast, the DER shows a positive association. Because of this, high-debt microfinance institutions benefit more from the PRM. The prudent and well-planned use of debt for improved MFI performance could be the cause.

In line with expectations, OSS shows a substantial negative association with the operating expense ratio, LLR, and CPB and a significant positive correlation with the equity ratio and average loan balance per borrower per

GNI per capita. The significant association between ROA and an explanatory variable like OSS is comparable. GLP has no bearing on or influence over financial sustainability because it has no significant correlation with performance measures.

The explanatory variables have a significant association, as shown in Table 4. The average loan balance per borrower and the GLP have a significant positive association and a strong negative correlation, respectively. The average loan balance per borrower and the operational expense ratio have a substantial negative correlation with the LLR and CPB and a significant positive correlation. The OER has a substantial positive correlation with the LLR and CPB but a significant negative correlation with the average loan balance per borrower. The average loan balance per borrower has a significant positive link with the CPB. Most of these relationships were as expected, but several were unexpected, necessitating more investigation.

A correlation matrix is used to check the multicollinearity problem. Regression analysis results are supposedly susceptible to distortion if data have multicollinearity issues. For effective inferential analysis, multicollinearity must be correctly identified and eliminated. According to the research, the data has a multicollinearity issue if the correlation between independent variables is more than 0.9. Table 4 shows that all the correlation coefficients between explanatory variables are well below 0.9. Thus, the data are free from the multicollinearity problem. In order to ensure the robustness of results, multicollinearity was further assessed using the VIF. Data are said to be free from multicollinearity issues if the VIF value is less than 5, which is the case in our study. Thus, multicollinearity is double-verified.

Regression

Table 5 provides the results of the regression analysis of performance variables.

Table 5. ***Fixed Effect Panel Data Regression Result***

Variables	*PRM*	*OSS*	*ROA*
Constant	30.487	104.468	–0.605
	(1.781***)	(14.936*)	(–0.305)
GLP	0.000	0.000	0.000
	(2.038**)	(2.013**)	(1.158)
OER	3.759	–0.164	0.244
	(5.306*)	(–0.566)	(2.976**)
LLR	–4.326	–0.875	–0.489
	(–9.519*)	(–4.709*)	(–9.273*)
DER	1.698	0.478	0.168
	(5.645*)	(3.889*)	(4.813*)
CPB	–5.997	–0.494	–0.329
	(–20.587*)	(–4.145*)	(–9.732*)
ALBG	2.351	1.767	0.349
	(1.786***)	(3.284*)	(2.285**)
R-Squared	0.800	0.539	0.673
Adjusted *R*-Squared	0.765	0.460	0.616
F-statistic	23.158*	6.787*	11.915*

Note. *, **, and *** denote significance at 1%, 5%, and 10% respectively.

T-statistic in parenthesis.

Panel data regression is used for inferential purposes, i.e., to identify the factors affecting financial sustainability measures and the direction of such relationship. Before getting with regression, the first and foremost step is determining the most appropriate regress model out of the pooled, fixed effect, and random effect OLS models. The redundant fixed effect test chooses between the polled and fixed effect models. If the probability of *F*-statistic and chi-square is less than 0.05 significance, then the fixed effect model is more appropriate, which is the outcome in the present study. Furthermore, the Hausman test is applied to make an appropriate choice between the fixed effect model and the random effect model. If the probability of Chi-square is less than 0.05, then the fixed effect model is more appropriate than the random effect, which is the case in the present study. Thus, fixed effect OLS regression is used.

Table 5 shows that the PRM has a significant relationship with all the explanatory variables at distinct significance levels. PRM has a significant positive relationship with GLP, operating expense ratio, DER, and average loan balance per borrower per GNI per capita and a significant negative relationship with LLR and CPB. As anticipated, there is a link between GLP, average loan balance per borrower, LLR, and CPB. The operational cost and DER, however, are also higher than anticipated. Such erratic outcomes might be explained by management's effectiveness and capacity to increase debt and operating costs.

OSS has a significant relationship with all the other explanatory variables except the operating expense ratio. While the relationship is negative with loan loss rate and CPB, it is positive with loan loss rate, DER, and average loan balance per borrower per GNI per capita. Similarly to the PRM outcome, the association between the DER and OSS is unexpected, which can be attributed to favorable managerial characteristics.

ROA and all other independent variables are significantly correlated except for the GLP. The average loan balance per borrower per GNI per capita and the operating expense ratio have a favorable relationship. The LLR and CPB have a poor relationship. Here, the relationship between operational costs and DER's direction defies predictions and previous research.

The positive relationship between GLP and financial sustainability indicators suggests that size does matter in shaping MFI's financial performance, and the bigger the lending, the higher the profitability and OSS. The LLR is negatively correlated with financial performance measures, as would be predicted, indicating that if MFIs anticipate a more significant likelihood of loan repayment default, that will have a negative impact on their profitability and financial performance.

Contrary to expectations, the DER has a positive relationship with the independent variable, meaning that the higher the debt in the overall capital structure, the better the financial performance. This leads us to believe that debt is a much better and preferred source of finance in the case of microfinance institutions. In the case of the operating expense ratio, contrary to belief, the positive relationship indicates that the higher operating expense levels are justified and necessary for the profitable performance of MFIs. There is a possibility that these institutions cause this high level of operating expense to focus on the depth of their outreach. Still, it is recommended that MFIs try to achieve economies of scale. The negative relation between CPB and financial sustainability measures could be attributed to the fact that if the CPB is low, the overall repayment burden over the borrower is also less, reducing the chances of default and improving the financial sustainability of microfinance institutions. It might also help increase the microfinance institution's clientele through positive word of mouth from existing clients.

A smaller ALBG, a smaller average loan size per borrower, and a higher public loan disbursement rate demonstrate a deeper level of outreach. As a result, the correlation between ALBG and all performance indicators is positive, suggesting that MFIs prioritizing outreach must sacrifice their financial performance. MFIs must compromise between their outreach and financial sustainability aims as a result.

The explanatory power of the model, given by adjusted *R*-squared value, is the highest for the PRM model (80%), followed by the ROA model (61.6%) and the OSS model (46%). The probability of *F*-statistic for all the models is less than 0.05, indicating that the overall model is statistically significant.

Conclusion

We can infer from the analysis that MFIs are essential to India's development. MFIs are crucial in India's self-sufficiency efforts by offering possibilities to start trade and commerce, encourage innovation, and achieve economic change. They also work to connect with as many individuals as they can in order to achieve this goal by encouraging inclusivity. The study found that the financial performance of profit-making and non-profit MFIs differs significantly. However, in the classification based on legal status, i.e., banks, NBFIs, and non-governmental organizations, financial performance varied significantly only in the case of ROA. The goal of the study is to pinpoint the variables influencing the financial viability of microfinance institutions. The study's findings show that nearly every explanatory factor had a significant impact on financial sustainability over the study period in one way or another. Operating expense ratios and the debt-to-equity ratio both showed unexpected results. We also note that financial sustainability is adversely correlated with outreach, meaning that MFIs must find a compromise between an appropriate level of outreach and financial success.

Managerial Implications

The study has some significant recommendations for the microfinance industry. First, the profit nature and NBFI MFIs must improve their financial sustainability game. Secondly, from the regression outcome, we can say that these institutions need to keep the CPB as low as possible and try to expand their operation, i.e., their lending levels. Though the operating expenses were justified by better financial sustainability, trying to attain economies of scale harms. They must try to keep the LLR as low as possible by tailoring their products as efficiently as possible according to the client's needs and requirements. Lastly, regarding outreach, MFIs must try and connect with as many people as possible (breath of outreach) but also make sure that they reach out to those in desperate need.

Limitations of the Study and Scope for Future Research

It is to be noted that the presented study only focused on a limited number of factors. Thus, future researchers can also include other factors identified from the microfinance industry and economic environment. Future studies can also focus on analyzing the financial sustainability in abnormal economic conditions like the COVID-19 pandemic. The time period and sample size can be extended in future investigations to improve the study's generalizability. Comparative research among different countries can assist in understanding the differences in the microfinance business among other nations.

Authors' Contribution

Prof. Amit Kumar Singh and Dr. Sandeep Kumar Goel created the idea for the study. Devyani Negi read the literature and extracted the papers. Together, the authors verified the analytical process and discussed the results. Devyani Negi and both co-authors co-wrote the paper.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

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