

# Performance of microfinance institutions during the COVID-19 pandemic: evidence from Indian states

*Priti Dubey and Garima Sirohi*

**Abstract:** *The microfinance sector has played a vital role in economic development and financial inclusion in India. However, with the COVID-19 pandemic affecting economic activities, microfinance institutions (MFIs) were impacted adversely. The Government of India introduced a moratorium to borrowers for loan repayments. This study examines the impact of the government's initiative of easing borrowers' financial burdens and the number of active COVID-19 cases on the operational efficiency of MFIs in Indian states. Additionally, the analysis explores the macro-economic determinants of MFI performance. The study incorporates the random effects robust regression model. The findings suggest that interest rate and inflation impact every MFI performance criterion while national income only affects the loan penetration efficiency of MFIs. It is also found that the moratorium significantly helped borrowers, whereas, it had adverse effects on the loan penetration by MFIs. Lastly, it is shown that MFIs remained resilient to COVID-19 cases, except in the case of reduced number of borrowers.*

**Keywords:** COVID-19, loan repayment, microfinance institutions, moratorium, random effects regression

## Introduction

ACCORDING TO THE GLOBAL DATA collected by Microfinance Barometer (2019), the microfinance industry is providing services like savings, deposits, loans, and insurance to 140 million low income people worldwide. The microfinance sector plays a significant role in uplifting low income groups, financial inclusion, and developing economies (Manzoor, 2018). The contribution of microfinance institutions (MFIs) in India has been commendable as it has penetrated approximately 25 per cent of the market by 2019 (KPMG, 2019). However, during the COVID-19 pandemic, the amount of loans disbursed by MFIs declined by approximately 88 per cent from 2019 to 2020 (CRIF High Mark, 2020). Loans disbursed by non-banking finance companies (NBFC) MFIs also slumped by 96 per cent (MFIN, 2020). In addition to loan amount penetration, MFIs also faced a decline of approximately 5 lakh (500,000) borrowers in a quarter in 2020. As the economy was partially shut down during the COVID-19 pandemic and the public was under lockdown, people lost their jobs and businesses lost their source of revenue. In order to safeguard borrowers as well as financial institutions from increasing defaults

---

*Priti Dubey* ([pritudubey.17@fms.edu](mailto:pritudubey.17@fms.edu)) Faculty of Management Studies, University of Delhi, India;  
*Garima Sirohi* ([garimasirohi.17@fms.edu](mailto:garimasirohi.17@fms.edu)) Faculty of Management Studies, University of Delhi, India  
© Practical Action Publishing, 2021, [www.practicalactionpublishing.org](http://www.practicalactionpublishing.org), ISSN: 1755-1978/1755-1986

during this economy-wide health crisis, the Government of India introduced a moratorium on principal and interest payments on loans from March 2020. The moratorium was initially provided for three months, after which it was further extended in various tranches. According to Sa-Dhan reports, 84 per cent of clients opted for a moratorium in India. However, there is negligible empirical evidence if this initiative was successful in achieving its goal of keeping MFIs afloat. Therefore, this paper studies if the moratorium initiative by the government made any significant contribution to the relief of borrowers concerning interest repayment or if it missed the mark. We also examine the performance of MFIs during a global pandemic.

This paper focuses on the factors affecting MFI performance during the pandemic times. MFI beneficiaries already face various challenges in their lives which are further accentuated by the challenges of the pandemic. Effects of these additional challenges may redefine the scope of the MFI sector and its functioning. This paper brings forth these factors of MFI performance during the COVID-19 pandemic. Performance of MFIs can be measured by various indicators such as, the population being serviced by MFIs, amount of loans disbursed to small borrowers, delinquency rate faced by MFIs, and ease of procedures (Srinivasan, 2015; Abara et al., 2017; Bibi et al., 2018; Jumpah et al., 2019). In this paper, we capture three of the measurement indicators, namely, delinquency rate, amount of loan disbursed (depth), and number of borrowers (breadth). The higher the loan size, the lower the MFIs' transaction cost, because of which MFIs strive to increase the loan disbursed as it lowers their cost of extending loans (Sangwan and Nayak, 2019). Thus, loan size captures the operational efficiency of MFIs. The key function of MFIs is to extend credit to as much of the population as possible. The higher the number of active borrowers, the better is the penetration of MFIs. Therefore, breadth of loan penetration, that is, number of active borrowers is another performance measurement criterion. Lastly, delinquency rate is captured to understand the efficiency of MFIs in terms of ability to recoup the credit extended. The higher the delinquency, the worse the efficiency of the MFI. Basing our research on the underlying theory, we extend the literature by studying the aforementioned MFI performance indicators during the COVID-19 pandemic.

There is a dearth of literature when it comes to the impact of COVID-19 on the performance of MFIs in India. Therefore, this paper explores the operational efficiency of MFIs during the COVID-19 pandemic. The performance has been measured on the basis of variables which indicate the operational efficiency. We address the question of whether MFIs have been able to fulfil their goal of inclusive financing during the tough times of the pandemic. Additionally, the scope of study has been extended to examine the impact of government measure of repayment relief to borrowers. The paper contributes to the literature by finding determinants which are vital in keeping MFI functioning efficient, even during a global pandemic. It can be helpful for regulators in formulating policies which aid the microfinance sector in improving its functions.

The paper has been segregated in four sections. The first section entails the review of literature. The second section discusses the data and methodology employed in

the study. This is followed by a discussion of the empirical results and analysis. The paper concludes with the findings.

### Literature review

There have been several studies on the impact of a pandemic on MFIs. Chakma et al. (2017) have explained the impact of Ebola on MFIs in Liberia and Sierra Leone. Their results show that despite restarting businesses after a long break, the MFIs were resilient. The repayment rates were as good as 90 per cent in Liberia and around 70 per cent in Sierra Leone. Ayani and SLAMFI (2015) found that Ebola badly impacted the business activities of the microfinance clients which led to the delayed repayments of loans. However, clients opted for some risk management strategies which eventually helped them and their microenterprises to survive the crisis. These operational decisions served in minimizing the overall negative impact of the crisis on repayment rates. Fernandes (2020) focused on the microfinance sector's reaction to macro-economic shocks in India. Three main events considered in this study are: demonetization, Kerala floods, and Cyclone Fani in Odisha. The results show that in all the three events, portfolio at risk increased immediately after the events but settled in subsequent months. The recovery rates also reduced initially but went up in subsequent months.

Many studies have focused on the impact of the COVID-19 pandemic on the microfinance sector. Malik et al. (2020) examined the effect of COVID on microfinance in Pakistan. As per its findings, week-on-week sales of microenterprises declined by 91 per cent for regular borrowers and 93 per cent for graduated borrowers. Shrestha (2020) studied the impact of COVID-19 on microfinance institutions in Nepal and found that the non-performing loans (NPLs) have increased only slightly. Nepal Microfinance Bankers' Association (2020) conducted a survey and stated that COVID-19 has negatively impacted the loan portfolios of MFIs. The results also stated that the quality of portfolio has declined. There are several reasons for loan delinquencies during COVID. Bertrand et al. (2020) found that over 80 per cent of the lowest income quintile rural households experienced a decline in income and nearly 84 per cent of households lost income during lockdown. This fall in income led to increased unemployment. It is found that sometimes the borrowers, because of having a liquidity crunch, cannot pay the equal monthly instalments even if they are willing to pay (Tiwari et al., 2008). Nepal Microfinance Bankers' Association (2020) reports that because of the uncertainty of the future of MFIs, workers are anxious and clients are facing a difficult time in this pandemic. Clients have lost their income and thus, would take more time to repay the loans. Collins and Urban (2017) have shown that though the financial and administrative costs of lenders increased, the loan outcomes were not negatively impacted by the moratorium in the short as well as long run.

Several factors are found to be impacting delinquency rate by various studies. Shu-Teng et al. (2015) identify education level and loan size in affecting the delinquency rate. Additionally, interest rate of lending has become a crucial factor in affecting delinquency rates in MFIs (Vandell, 1993; Olomola, 2001; Okpugie, 2009;

Dorfleitner et al., 2016; Sangwan et al., 2020). A study by Okorie (1986) suggests that the transaction cost of the loan, interest rate, and borrower's income determine loan delinquency rate. Srinivasan (2015) finds that optimal loan size helps in portfolios being profitable. The majority of the studies examine factors affecting loan defaults and they find loan size, education, and household income to be significant (Nawai and Shariff, 2012; Onyeagocha et al., 2012; Setargie, 2013; Abara et al., 2017; Priyankara and Sumanasiri, 2019; Sangwan et al., 2020; Zheng and Zhang, 2020).

Interest rate has been found to be the most important contributor in determining the loan size that MFIs extend (Dehem and Hudon, 2013; Jumpah et al., 2019; Sangwan and Nayak, 2020). As the interest rate increases, so does the transaction cost for borrowers which discourages them to avail more loans. At the same time, the higher the loan size, the more the borrowers default (Sangwan and Nayak, 2020). Some studies also find that borrowers are not influenced by the interest rate while taking loans. It implies that loan size disbursed by MFIs is not dependent on interest rate (Tiwari et al., 2008). As per Dorfleitner et al. (2016), a borrower's household income and interest rate determine the capability of repayment. This tendency of low income households in defaulting makes MFIs extend smaller loans to such borrowers. Education is perceived as an important factor in determining the loan size (Okurut et al., 2005). People with higher education level demand more credit.

Kwakwa (2009) examined the role of macro-economic factors which impact the loan repayment rate. The results show that a decline in real gross domestic product (GDP) increases corporate loan defaults and delays. In addition, exchange rate depreciation directly affects the ability of borrowers to repay the loans. Bloem and Gorter (2001) find foreign exchange rate, price of main export of the country, volatility in interest rate, and poor supervision to be determining factors in loan delinquency. They found that the causes of NPLs are inevitable economic decisions by the borrowers and plain bad luck (bad weather, unexpected price changes for certain products etc.). Oboh and Kushwaha (2009) determine that poor socio-demographic factors like low education level, large family size, and low income are the factors affecting agricultural loan size. Bibi et al. (2018) measured the social performance of microfinance institutions through breadth (number of borrowers) and depth (loan amount). The author found that the maturity of an institution significantly impacted the breadth but not the depth of outreach. Macro-economic factors like inflation and real GDP also affect the number of borrowers and loan amount. Real GDP has a significant negative impact on the number of borrowers and significant positive impact on loan amount (Bassem, 2009; Ashraf and Hassan, 2011; Bibi et al., 2018). Inflation is found to be positively impacting the number of borrowers as well as the loan amount. It indicates that MFIs could reach more borrowers in an inflationary environment (Hartarska, 2005; Bassem, 2009; Bibi et al., 2018).

## Data and methodology

In the present paper, we examine the impact of the COVID-19 pandemic on the overall performance of the MFI sector in Indian states. Therefore, we have formulated three objectives. First, we study the impact of the COVID-19 pandemic

on delinquency rate. Second, the impact of COVID-19 is examined on the amount of loan disbursed in the states. Last, we test the impact on the number of borrowers in the states.

We measure MFI performance through three variables, delinquency rate, amount of loans disbursed, and number of borrowers. The delinquency rate is the percentage of delayed payments out of total loans extended by MFIs. Furthermore, to gauge the impact of the COVID-19 pandemic, we utilize the dataset of number of COVID-19 active cases and the introduction of the moratorium in the economy. The moratorium period is introduced in the equations as a dummy variable which takes the value of 1 when the moratorium was introduced in the economy and 0 otherwise. Additionally, necessary control variables are also taken into consideration, namely unemployment, lending rate, inflation, and GDP.

The datasets for delinquency rate, amount of loans, number of borrowers, and lending interest rate of MFIs have been obtained from Sa-Dhan reports. Data of number of COVID-19 active cases has been taken from the website <https://api.COVID19india.org/>. Unemployment rates for each state have been sourced from the Centre for Monitoring Indian Economy. The unemployment rate data was found in monthly frequency which was further converted into quarterly data by using the simple average method. Consumer price index (CPI) and GDP are taken from the website of the Reserve Bank of India. The moratorium period has been considered from the quarter January 2020–March 2020 until the quarter July 2020–September 2020.

MFI penetration differs across states in India on the basis of development level, socioeconomic structures, information asymmetry among the population, and governance in different regions (Sangwan and Nayak, 2019). To account for this difference in distribution and efficiency disparity in loan dispersion across regions we have considered 35 states and Union Territories (UTs) of India. The time period of our study spans from April 2019 to September 2020, in quarterly frequency. Therefore, we have employed panel data analysis consisting of 35 cross-sections and six quarters.

We formulate three separate equations and employ the random effects regression model (REM). REM robust test has been used for homoscedastic and uncorrelated consistent standard errors. Additionally, Hausman test is conducted to confirm the applicability of REM in our dataset. Before applying the test, the variables, active number of COVID cases, loan amount, unemployment rate, number of borrowers, and GDP, were transformed in to their logarithmic forms. CPI and interest rate are transformed in to their growth forms. Then, stationarity of all the variables is checked by applying Levin-Lin-Chu unit root test (2002).

$$DR_{it} = \beta_1 + \beta_2 \times \log\_Cov_{it} + \beta_3 \times Dummy\ I_t + \beta_4 \times g\_CPI_t + \beta_5 \times \log\_AoL_{it} + \beta_6 \times g\_IR_t + \beta_7 \times \log\_UR_{it} + \beta_8 \times \log\_NoB_{it} + u_{it} \quad (1)$$

$$\log\_AoL_{it} = \beta_9 + \beta_{10} \times \log\_Cov_{it} + \beta_{11} \times g\_IR_t + \beta_{12} \times \log\_UR_{it} + \beta_{13} \times \log\_GDP_t + \beta_{14} \times g\_CPI_t + \beta_{15} \times Dummy\ I_t + \beta_{16} \times \log\_NoB_{it} + u_{it} \quad (2)$$

$$\begin{aligned} \text{Log\_NoB}_{it} = & \beta_{17} + \beta_{18} \times \log\_Cov_{it} + \beta_{19} \times g\_IR_t + \beta_{20} \times \log\_UR_{it} \\ & + \beta_{21} \times \log\_GDP_t + \beta_{22} \times g\_CPI_t + u_{it} \end{aligned} \quad (3)$$

In the above equations, *DR* stands for delinquency rate, *log\_Cov* is the logarithmic form of active COVID-19 cases, dummy 1 is dummy variable for introduction of moratorium, *g\_CPI* is the growth in CPI, *log\_AoL* is logarithmic amount of loans disbursed, *g\_IR* is growth in interest rate, *log\_UR* is logarithmic unemployment rate, *log\_NoB* is logarithmic form of number of borrowers, and *log\_GDP* is logarithmic form of GDP.

In our study, REM is used to incorporate the randomness across cross-sectional units as the MFI performance differs across different states and UTs. REM allows us to include time varying variables along with time invariant variables. REM is estimated with generalized least square (GLS) while the fixed effects model (FEM) is estimated by using ordinary least square (OLS). GLS estimates ensure smaller standard errors which further allows for more efficient and consistent coefficients. Hence, REM is the more efficient estimation model for our study.

## Empirical results and analysis

We find three sets of results pertaining to each objective. First, we test the stationarity of all the variables and it is found that every variable under consideration in the study is integrated of order zero. On examining objective 1, we find the results depicted in Table 1.

The results suggest that inflation rate, lending rate, and loan size play a significant and positive role in impacting delinquency rate. In addition, introduction of the moratorium has also had a positive and significant impact on the delinquency rate.

**Table 1** Results of REM on delinquency rate

<i>Variables</i>	<i>Coefficients</i>	<i>p-value</i>	
G_CPI	77.3268	0.0080*	
G_IR	38.2313	0.0070*	
Log_UR	-0.3650	0.2570	
Log_AoL	2.7142	0.0250*	
Log_NoB	-2.6778	0.0190*	
Log_Cov	-0.1040	0.4170	
Dummy 1	4.0406	0.0340*	
Constant	14.4257	0.0080*	
R-squared	0.2288		
<i>Diagnostic tests</i>			
<i>Test conducted</i>	<i>Null hypothesis</i>	<i>Test statistic</i>	<i>p-value</i>
Hausman test	Preferred model is random effects	0.0000	1.0000

Note: \* Significant at 0.05 significance level

**Table 2** Results of REM on amount of loan

<i>Variables</i>	<i>Coefficients</i>	<i>p-value</i>
G_CPI	37.4855	0.0000*
G_IR	-404.9404	0.0000*
Log_UR	-0.0001	0.9940
Log_Cov	-0.0014	0.7990
Log_GDP	48.5864	0.0000*
Dummy 1	-4.1262	0.0000*
Log_NoB	0.9671	0.0000*
Constant	-755.6882	0.0000*
R- squared	0.9925	

  

<i>Diagnostic tests</i>			
<i>Test conducted</i>	<i>Null hypothesis</i>	<i>Test statistic</i>	<i>p-value</i>
Hausman test	Preferred model is random effects	0.0000	1.0000

Note: \* Significant at 0.05 significance level

Number of borrowers of MFIs however, have a negative effect. It implies that while total amount of loan increases delays in repayments, increase in the number of borrowers allows MFIs to spread their repayment delays risk. Due to increased numbers of borrowers, the percentage of borrowers who delay the repayments declines. Results from the second objective are presented in Table 2.

These results imply that the amount of loans disbursed were not impacted by the number of COVID-19 cases in the states. However, the moratorium introduction led to a decrease in total amount of loan extended as credit by the MFIs. This could be attributed to the fact that MFIs did not have enough funds themselves during the pandemic and due to the moratorium, their source of revenue was further reduced. Additionally, inflation, GDP, and the number of borrowers had a significant and positive impact on the amount of credit. Alternatively, the lending rate has a negative relationship with loan amount as borrowers are discouraged from taking loans when interest rates increase. Lastly, results from the third objective are depicted in Table 3.

The results find that COVID-19 active cases significantly the impact number of borrowers. As cases increase, the number of borrowers declines significantly. Other variables which are found to be impacting the number of borrowers are inflation, interest rate, and GDP. While interest rate has a negative impact, inflation and GDP have a positive effect on the number of borrowers in the state.

Summarizing, our study finds that MFI performance was resilient to increasing numbers of COVID-19 active cases except in the case of number of borrowers, which saw a significant decline. Additionally, introduction of the moratorium had mixed effects on the performance. Borrowers were relieved of the interest repayment burden as can be seen from increased delayed payment rates during the moratorium. On the other hand, total amount of loan disbursed in the states was adversely affected. Here, the problem lies with the government policy wherein

**Table 3** Results of REM on number of borrowers

<i>Variables</i>	<i>Coefficients</i>	<i>p-value</i>
G_CPI	13.8312	0.0000*
G_IR	-54.9208	0.0000*
Log_UR	0.0398	0.3320
Log_Cov	-0.0293	0.0000*
Log_GDP	7.1403	0.0000*
Constant	-97.4418	0.0000*
R- squared	0.0217	

  

<i>Diagnostic tests</i>			
<i>Test conducted</i>	<i>Null hypothesis</i>	<i>Test statistic</i>	<i>p-value</i>
Hausman test	Preferred model is random effects	0.0000	1.0000

Note: \* significant at 0.05 significance level

the moratorium was only available to the borrowers of MFIs and not to the MFIs themselves. Due to this double burden on MFIs, while not receiving repayments they still had to repay their own sources from where the funds were raised. Another hypothesis behind decreasing amount of loans could be the fear of the MFIs rating downgrading. If MFIs extend more loans during this moratorium period when the repayments are already delayed, MFIs will end up with more portfolios at risk. It could lead to a low credit rating which might create problems for MFIs in raising fresh capital and liquidity in the future.

Interest rate has been found to be a significant determinant in every measurement criteria of MFI performance. Therefore, in order to manage MFI efficiency utmost heed should be paid to lending rates by the regulatory authorities. Retail inflation has also been playing a vital role in impacting MFI performance in every criterion. CPI reduces the purchasing power of borrowers which forces them to borrow more and also reduces their capability of repaying the loan. It is also found that the higher amount of loans MFIs disburse, the higher the rate of delayed payment. However, an increased base of borrowers can help in reducing delinquency rates.

## Conclusion

Our study shows that the COVID-19 pandemic has adversely affected the number of borrowers in the microfinance sector. However, delinquency rates and the amount of loans disbursed have remained resilient from its impact. It is also found that the government initiative of introducing the moratorium relieved borrowers from their loan repayment burden as the loan outstanding from MFIs increased significantly after introduction of the moratorium. At the same time, it negatively impacted the collection efficiency of the MFIs. In addition, several other factors are found to be significant in determining the MFIs' operational efficiency, namely, interest rate, retail inflation, GDP, and number of borrowers. Our results support the findings of



various studies suggesting that the MFI sector has remained resilient during pandemics (Ayani and SLAMFI, 2015; Chakma et al., 2017; Fernandes, 2020). However, findings of our study are different from those of Nepal Microfinance Bankers' Association (2020) and Shrestha (2020), who found that the quality of loan portfolio has declined during the pandemic.

Our findings, in support of *Bharat Microfinance Report* (Sa-Dhan, 2020), imply that the performance of MFIs remained steady during COVID-19 in the context of the quality of loan portfolios, delinquency rate, and amount of loan disbursed. According to Sa-Dhan reports, it is also seen that no MFIs have been shut down during COVID-19. It suggests that the MFIs have stayed afloat while fighting amid a liquidity crunch.

These findings could help regulators in formulating policies which can aid functioning and operational efficiency of MFIs during a pandemic. It also helps us understand various factors which one should keep in consideration when gauging the performance of MFIs. Interest rate and retail inflation play a vital role in influencing how an MFI would perform. Since our study has considered datasets at state level at a quarterly frequency, acquisition of various variables like gross state product, number of MFIs, and literacy rate were not possible. Hence, this paper can be further extended by creating a more exhaustive economic model of the determinants of MFI performance.

## References

- Abara, G., Mengesha, B. and Reddy, P.A.K. (2017) 'Determinants of credit default risk of micro-finance institutions in Assosa Zone', *Research on Humanities and Social Sciences* 7(19): 31–9.
- Ashraf, A. and Hassan, M.K. (2011) 'Firm-level attributes and performance of micro-finance institutions', *Midwest Finance Association 2012 Annual Meeting* [online] <<https://dx.doi.org/10.2139/ssrn.1929587>>.
- Ayani and SLAMFI (2015) *Sierra Leone: The Impact of the Ebola Crisis on The Microfinance Sector and Stories of Micro-entrepreneurs' Resilience* [online], Cordaid <<https://www.findevgateway.org/case-study/2015/03/sierra-leone-impact-ebola-crisis-microfinance-sector-and-stories>> [accessed 12 October 2021].
- Bassem, B.S. (2009) 'Governance and performance of microfinance institutions in Mediterranean countries', *Journal of Business Economics and Management* 10(1): 31–43 <<http://dx.doi.org/10.3846/1611-1699.2009.10.31-43>>.
- Bertrand, M., Krishnan, K. and Schofield, H. (2020) 'How are Indian households coping under the Covid -19 lockdown? Eight key findings' [online], Rustandy Center for Social Sector Innovation <[https://www.chicagobooth.edu/research/rustandy/blog/2020/how-are-indian-households-coping-under-the-covid19-lockdown?sc\\_lang=en](https://www.chicagobooth.edu/research/rustandy/blog/2020/how-are-indian-households-coping-under-the-covid19-lockdown?sc_lang=en)> [accessed 12 October 2021].
- Bibi, U., Balli, H.O., Matthews, C.D. and Tripe, D.W.L. (2018) 'New approaches to measure the social performance of microfinance institutions (MFIs)', *International Review of Economics and Finance* 53: 88–97 <<https://doi.org/10.1016/j.iref.2017.10.010>>.
- Bloem, A.M. and Gorter, C.N. (2001) *The Treatment of Nonperforming Loans in Macroeconomic Statistics* [online], International Monetary Fund, Working Paper No. 01/209 <<https://www.imf.org/en/Publications/WP/Issues/2016/12/30/The-Treatment-of-Nonperforming-Loans-in-Macroeconomic-Statistics-15525>> [accessed 12 October 2021].

Chakma, H., Coppel, E., Diallo, A., Dubitsky, R. and Whisson, I. (2017) *Financial Inclusion and Resilience: How BRAC's Microfinance Program Recovered from the West Africa Ebola Crisis* [online], Global Delivery Initiative <<https://www.findevgateway.org/case-study/2017/07/financial-inclusion-and-resilience-how-bracs-microfinance-program-recovered-west>> [accessed 13 October 2021].

Collins, J.M. and Urban, C. (2017) 'The effects of a foreclosure moratorium on loan repayment behaviors', *Regional Science and Urban Economics* 68: 73–83 <<https://doi.org/10.1016/j.regsciurbeco.2017.10.010>>.

CRIF High Mark (2020) *MicroLend-Vol XIV Q3 Dec 2020* [online], CRIF High Mark <<https://www.crihighmark.com/media/2081/crif-microlend-vol-xii-june-2020.pdf>> [accessed 12 October 2021].

Dehem, T. and Hudon, M. (2013) 'Microfinance from the clients' perspective: an empirical enquiry into transaction costs in urban and rural India', *Oxford Development Studies* 41: 117–32 <<http://dx.doi.org/10.1080/13600818.2013.787057>>.

Dorflleitner, G., Just-Marx, S. and Priberny, C. (2016) 'What drives the repayment of agricultural micro loans? Evidence from Nicaragua', *The Quarterly Review of Economics and Finance* 63: 89–100 <<http://dx.doi.org/doi:10.1016/j.qref.2016.02.009>>.

Fernandes, K. (2020) 'Microfinance recovery analysis: using time series of Northern Arc portfolio data' [blog], All About Finance <<https://blogs.worldbank.org/allaboutfinance/microfinance-recovery-analysis-using-time-series-northern-arc-portfolio-data>> [accessed 12 October 2021].

Hartarska, V. (2005) 'Governance and performance of microfinance institutions in Central and Eastern Europe and the newly independent states', *World Development* 33(10): 1627–43 <<http://dx.doi.org/10.2139/ssrn.542602>>.

Jumpah, E.T., Osei-Asare, Y. and Tetteh, E.K. (2019) 'Do farmer and credit specific characteristics matter in microfinance programmes' participation? Evidence from smallholder farmers in Ada west and east districts', *Agricultural Finance Review* 79(3): 353–70 <<https://doi.org/10.1108/AFR-05-2018-0044>>.

KPMG (2019) *Microfinance: Contributions to Financial Inclusion; Opportunity and Challenges Ahead* [online] <<https://assets.kpmg/content/dam/kpmg/in/pdf/2019/12/MFI-Microfinance-contributions-to-financial-inclusion.pdf>> [accessed 12 October 2021].

Kwakwa, P.O. (2009) *Causes of nonperforming loans at Bosomtwe Rural Bank Limited in Ghana* [online], Master's thesis, School of Graduate Studies, Kwame Nkrumah University of Science and Technology <<http://hdl.handle.net/123456789/5696>> [accessed 13 October 2021].

Malik, K., Meki, M., Morduch, J., Ogden, T., Quinn, S. and Said, F. (2020) 'COVID-19 and the future of microfinance: evidence and insights from Pakistan', *Oxford Review of Economic Policy* 36: S138–68 <<https://doi.org/10.1093/oxrep/graa014>>.

Manzoor, A. (2018) 'Role of microfinance institutions in development of India', in R. Das (ed.), *Microfinance and its Impact on Entrepreneurial Development, Sustainability, and Inclusive Growth*, pp. 138–55, IGI Global <<https://doi.org/10.4018/978-1-5225-5213-0.ch008>>.

Microfinance Barometer (2019) 'Microfinance Barometer 2019: 10 years already! A look back at the trends in microfinance', *Convergences World Forum* <<https://www.convergences.org/en/104906-2/>> [accessed 16 October 2021].

Microfinance Institutions Network (MFIN) (2020) *Micrometer Issue 33* [online], Microfinance Institutions Network <[https://mfinindia.org/assets/upload\\_image/publications/Micrometer\\_Synopsis/33\\_Micrometer%20Synopsis%20-%20Q4%20FY%202019-20.pdf](https://mfinindia.org/assets/upload_image/publications/Micrometer_Synopsis/33_Micrometer%20Synopsis%20-%20Q4%20FY%202019-20.pdf)> [accessed 12 October 2021].

Nawai, N. and Shariff, M. (2012) 'Factors affecting repayment performance in microfinance programs in Malaysia', *Procedia: Social and Behavioural Sciences* 62: 806–11 <<https://doi.org/10.1016/j.sbspro.2012.09.136>>.

Nepal Microfinance Bankers' Association. (2020) *Survey Report on Microfinance: Present Situation and Future Priorities* [online], NMBA, Nepal <[https://www.nmba.org.np/images/Microfinance\\_Survey\\_Report\\_May\\_2020\\_Final.pdf#toolbar=0&navpanes=0&scrollbar=0](https://www.nmba.org.np/images/Microfinance_Survey_Report_May_2020_Final.pdf#toolbar=0&navpanes=0&scrollbar=0)> [accessed 12 October 2021].

Oboh, V. and Kushwaha, S. (2009) 'Socio-economic determinants of farmers' loan size in Benue State, Nigeria', *Journal of Applied Sciences Research* 5(4): 354–8.

Okorie, A. (1986) 'Major determinants of agricultural smallholder loan repayment in a developing economy: empirical evidence from Ondo State, Nigeria', *Agricultural Administration* 21(4): 223–34 <[https://doi.org/10.1016/0309-586X\(86\)90040-3](https://doi.org/10.1016/0309-586X(86)90040-3)>.

Okpugie, G. (2009) 'Nigeria: high microfinance interest rates cause loan defaults', *The Guardian*, 25 September [online] <<https://www.microcapital.org/news-wire-nigeria-high-microfinance-interest-rates-cause-loan-defaults/>> [accessed 12 October 2021].

Okurut, F.N., Schoombie, A. and Van Der Berg, S. (2005) 'Credit demand and credit rationing in the informal financial sector in Uganda', *South African Journal of Economics* 73(3): 482–97 <<https://doi.org/10.1111/j.1813-6982.2005.00033.x>>.

Olomola, A.S. (2001) *The Nature and Determinants of Rural Loan Repayment Performance in Nigeria: The Case of FADU's Micro-credit Programme*, Nigerian Institute of Social and Economic Research (NISER), Ibadan <<http://link.bu.edu/portal/The-nature-and-determinants-of-rural-loan/bA6tHYSnE60/>> [accessed 12 October 2021].

Onyeagocha, S.U.O., Chidebelu, S.A.N.D. and Okorji, E.C. (2012) 'Determinants of repayment of loan beneficiaries of micro finance institutions in southeast states of Nigeria', *International Journal of Agricultural Management and Development* 2(3): 1–9.

Priyankara, D.T. and Sumanasiri, E.A.G. (2019) 'Determinants of microfinance loan default: an empirical investigation in Sri Lanka', *South Asian Journal of Social Studies and Economics* 4(3): 1–13 <<https://doi.org/10.9734/SAJSSE/2019/v4i330127>>.

Sa-Dhan (2020) *Bharat Microfinance Report* [online], Sa-Dhan <<http://www.sa-dhan.net/bharat-microfinance-report/>> [accessed 12 October 2021].

Sangwan, S. and Nayak, N.C. (2019) 'Do outreach approaches differ between self-help group–bank linkage and microfinance institution-based microfinance? Evidences from Indian states', *Journal of Social and Economic Development* 21: 93–115 <<https://doi.org/10.1007/s40847-019-00078-w>>.

Sangwan, S. and Nayak, N.C. (2020) 'Factors influencing the borrower loan size in microfinance group lending: a survey from Indian microfinance institutions', *Journal of Financial Economic Policy* 13(2): 223–38 <<https://doi.org/10.1108/JFEP-01-2020-0002>>.

Sangwan, S., Nayak, N.C. and Samanta, D. (2020) 'Loan repayment behaviour among the clients of Indian microfinance institutions: a household-level investigation', *Journal of Human Behavior in the Social Environment* 30(4): 474–97 <<https://doi.org/10.1080/10911359.2019.1699221>>.

Setargie, S. (2013) 'Credit default risk and its determinants of microfinance industry in Ethiopia', *Ethiopian Journal of Business and Economics* 3(1): 1–21.

Shrestha, P.K. (2020) *Impact of Covid-19 on Microfinance Institutions of Nepal* [online], Working Paper No. 51, Nepal Rastra Bank <[https://www.researchgate.net/publication/348349800\\_Impact\\_of\\_Covid-19\\_on\\_Microfinance\\_Institutions\\_of\\_Nepal](https://www.researchgate.net/publication/348349800_Impact_of_Covid-19_on_Microfinance_Institutions_of_Nepal)> [accessed 12 October 2021].

Shu-Teng, L., Zariyawati, M.A., Suraya-Hanim, M. and Annuar, M.N. (2015) 'Determinants of microfinance repayment performance: evidence from small medium enterprises in Malaysia', *International Journal of Economic and Finance* 7(11) <<https://doi.org/10.5539/ijef.v7n11p110>>.

Srinivasan, N. (2015) 'Transaction costs of lending to vulnerable people', *Microfinance Review* 7(2): 212–9.

Tiwari, A., Khandelwal, A. and Ramji, M. (2008) *How do Microfinance Clients Understand their Loans?* Working Paper Series No. 25, Institute for Financial Management and Research, Andhra Pradesh.

Vandell, K.D. (1993) 'Handing over the keys: a perspective on mortgage default research', *Journal of the American Real Estate and Urban Economics Association* 21(3): 211–46 <<https://doi.org/10.1111/1540-6229.00609>>.

Zheng, C. and Zhang, J. (2020) 'The impact of COVID-19 on the efficiency of micro-finance institutions', *International Review of Economics and Finance* 71: 407–23 <<https://doi.org/10.1016/j.iref.2020.09.016>>.