Outreach, Sustainability and Efficiency of Microfinance Institutions in Nepal

[1]Sabin Subedi & [2]Dipesh Karki

[1] Independent Researcher, Kathmandu University School of Management, Nepal
[2]Assistant Professor, Kathmandu University School of Management, Nepal

Abstract

Microfinance Institutions (MFIs) provide financial services to those who have no access to finance and are hence considered a tool for poverty alleviation. However, the clear relationship between the depth of the MFIs and their sustainability is still lacking as there is an ongoing debate on whether the two components complement each other or whether there exists a tradeoff. This study applied the panel regression analysis to the data from 44 MFIs of Nepal from 1999 to 2019 and explored the inter-relationship between depth and sustainability of MFI in the Nepalese context. In addition to the two variables of interest, this study further analyses the interaction effect of operational efficiency. The findings show a significant tradeoff relationship between outreach and sustainability at a 99% confidence interval, further moderated by operational efficiency. As a result of increased operational efficiency, MFIs can have better outreach and sustainability. These findings can thus provide a better policy prescription that promotes operational efficiency and ultimately improve both the outreach and sustainability of MFIs.

Keywords: microfinance institutions, depth of outreach, financial sustainability, operational efficiency, Nepal

Introduction

Microfinance Institutions play a significant role in poverty reduction by reducing the gap between formal financial institutions and the poor (Cull et al., 2018). Microfinance pioneers believe that financial access can significantly help in reducting poverty (Dunford, 2006; Littlefield et al., 2003). Access to financial tools can help in increasing investments, diversifying savings, accumulating assets, and contributing to empowering women, the poor, the underprivileged, and the uneducated (Hermes & Lensink, 2011).

MFIs differ from the contemporary financial institutions because it exhibits dual nature, namely, social and for-profit (Molinero et al., 2006). Social nature mainly focuses on poverty alleviation, financial access and empowerment, whereas for-profit nature focuses on increasing profitability and efficiency. Proper alignment of the social and for-profit nature is the primary objective for any MFI. The dimension

of social impact is proxied through the depth of the outreach, while profitability and efficiency can be proxied through financial sustainability.

Outreach is principally defined in terms of breadth (how many poor) and depth (how much poor) (Rhyne, 1998; Okumu, 2007; Yaron, 1994). Woller and Schreiner (2002) proposed six dimensions of measuring outreach; depth, worth to users, cost, width, length and scope. The concept of outreach incorporates both qualitative and quantitative, and so do its indicators. However, they are relatively simple to collect and provide a good proxy (Ledgerwood, 2000). On the other hand, the sustainability of MFI is considered to its ability to cover all of its costs with the revenue it earns without relying on donor funding (Ledgerwood, 2000). According to Degefe (2009), as cited in Rao and Fitamo (2014), if subsidies fully or partially recover the costs and expenses, it does not imply that MFI is financially and operationally viable; it means they are not sustainable. Operational efficiency is MFIs' ability to meet certain standards or benchmarks, thus lowering its cost. According to Bos and Millone (2015), MFIs that have a greater depth of outreach are more effective in addressing their goals.

Table 1

Status of Microfinance as of 2021

Particulars	Value
No. of MFIs	78
No. of Branches of MFIs	4018
Total Members of MFIs	4,886,881
Total Capital Fund of MFIs (NPR)	32,228,856
Total Loan and Advances of MFIs (NPR '000)	1,462,160,550
Total Savings in MFIs (NPR '000)	112,933,518
Total Loan Loss Provision of MFIs (NPR '000)	8,865,977
No. of Total Staff	19,058

Source: (NRB, 2021)

As an outreach of MFI attempts to address the amelioration of poverty while sustainability is concerned with profitability, there persists an ongoing debate on the nature of the relationship between these two seemingly opposing goals. Some studies show no real relationship between these factors (Nurmakhanova et al., 2015), whereas some studies show a tradeoff between the two (Hermes & Lensink, 2011). This debate ultimately attempts to find the solution on whether, in

the future, MFI should be a profit-oriented, self-sustaining, privately funded, or socially subsidized non-profit organization (Morduch, 2000). Thus, from a perspective of policy development, it is imperative to understand the nature of financial sustainability, outreach, and efficiency of the institutions to formulate accurate praxis that will set the course for future actions of MFI.

In Nepal, microfinance has been officially recognized as a tool for poverty alleviation since the country's Sixth Plan (1980/81-1984/85), and it gained momentum in the 1990s after the restoration of democracy. Currently, the competition in microfinance has been increasing as many clients in rural areas have more outstanding options than the MFI (Risal, 2018).

As of mid-October 2020, 78 MFIs are operating in Nepal. Although there is a decline from 90 in 2019, considering that there were only two operational MFIs in 1993, the number of MFIs has considerably risen along with the number of centers and branches over the years (NRB, 2021; Shrestha, 2019). The financial inclusion and access ambition of NRB is well aligned with the mission of the MFIs. In Nepal, there are both retail and wholesale MFIs, and four of them are depository institutions. The number of bad debts and non-performing loans has been well under control, at around 2% of the total loans. However, this could mean that the institutions have not been effective in reaching the depths of real poverty. To fulfill the social aim, the status of the depth of outreach of MFIs should always be considered during the policy-making process.

So far, very few studies have investigated the relationship between financial sustainability, outreach, and efficiency in Nepal. For instance, Jha (2017) has shown that good corporate governance practice is conducive to improving the MFIs' social mission and its financial sustainability. On the other hand, Adhikary and Papachristou (2014) have found that in South Asia, including Nepal, the outreach's depth and breadth are positively associated with profitability, and the depth further reduces the risk than breadth.

This study examines the relationship between these two dimensions, namely outreach and sustainability, in the context of Nepalese MFIs. In this study, savings and credit cooperatives are also included as they were registered under NRB (Nepal Rastra Bank) under a limited banking operation license till July of 2018 with similar objectives to MFIs. These saving and credit cooperatives are formed under the cooperative model of MFIs. Moreover, this study further examined the role of

operational efficiency in the relationship. Outreach, sustainability, and efficiency are widely used in microfinance, and some studies use them even without a clear definition (Ledgerwood, 1998; Hulme & Mosley, 1996). There are various indicators for measuring outreach, financial sustainability, and operational efficiency based on their concepts (Schreiner & Yaron, 1999; Ledgerwood, 1998; Yaron, 1994), and studies have used a variety of indicators to study the relationship (Nurmakhanova et al., 2015; Hermes & Lensink, 2011; Okumu, 2007).

Literature Review

Sustainability has been defined in various concepts, and different studies use different terms based on their concepts, such as profitability, self-sufficiency, financial self-sufficiency, and viability (Ledgerwood, 1998; Rhyne, 1998; Yaron, 1994; Schreiner, 2001; Paxton, 2002). Rhyne (1998) has defined sustainability as the permanent existence of organizations meeting the specified objectives, inferring that the institution must be sustainable to meet the objective of poverty alleviation and reaching the poor. According to Woller and Schreiner (2002), the two concepts of depth of outreach and financial self-sufficiency are not mutually exclusive, and with the proper approach and strategy, both are jointly obtainable. In this regard, there are two schools of thought on improving the standards of the poor, namely, the poverty approach and the sustainability approach (Rao & Fitamo, 2014). The poverty approach focuses on reaching the poorest of individuals regardless of the cost, and the additional cost incurred, as poor clients are costly to serve, should be covered through donations. In the sustainability approach, the institutions focus on reducing the cost to insure that revenue can cover the cost in the long term, and the donation is used to cover start-up costs (Schreiner, 2002).

The belief of a tradeoff relationship between financial self-sufficiency and depth of outreach can be true when the focus on financial self-sufficiency will divert the MFIs' attention from poverty alleviation or reaching the poor because of the higher cost per dollar associated with lending to the poor (Woller & Schreiner, 2002). Hermes et al. (2011), with a relatively greater dataset, found convincing evidence on the tradeoff relationship between sustainability and outreach, and this finding is well supported by Zainuddin et al. (2020), Awaworyi Churchill (2020), Cull et al. (2007), and Makame and Murinde (2006). However, Nurmakhanova et al. (2015) showed minimal empirical evidence that the tradeoff relationship exists. At the same time, Quayes (2012; 2015) found a complementary relationship between

these two variables meaning that reaching out to the poor can bolster financial sustainability.

Table 2

Major Studies and their Findings

Authors	Methodology	Region	Sample	Findings
Hermes et al. (2011)	Stochastic Frontier Analysis	Global	435	Tradeoff
Quayes (2012)	Panel Analysis	Global (83 countries)	702	Complementary positive relationship
Paxton (2002)	Correlational	Latin America and Africa	18	Tradeoff
Quayes (2015)	Panel Analysis	Global (87 countries)	764	Positive Relationship
Churchill (2018)	3 stage least square	33 African Countries	206	Tradeoff
Sim and Prabhu (2014)	Black Sholes Model	India	32	Positive Relationship
Nurmakhanova et al. (2015)	Panel Analysis	Global (71 countries)	450	No tradeoff
Cull et al. (2007)	Comparative Study	Global (49 countries)	124	Tradeoff
Olivares-Polanco (2005)	OLS regression	Latin America	28	Tradeoff
Makame and Murinde (2006)	Panel Analysis	East African (5 countries)	33	Tradeoff
Gonzalez and Rosenberg (2006)	Panel Analysis	Global	2600	No tradeoff
Hudon and Traca (2011)	OLS regression	Global	100	Positive Relationship
(Sheremenko et al., 2017)	2 Stage least Square	Eastern Europe and Central Asia	160	Tradeoff

(Mia & Chandran, 2016)	Panel Analysis	Bangladesh	163	Tradeoff
(Fadikpe et al., 2022)	GLS regression	Sub-Saharan Africa	105	Tradeoff
(Purwanto et al., 2020)	Data Envelopment Analysis	Indonesia	40	Tradeoff
(Postelnicu & Hermes, 2018)	Panel Analysis	Global	6934	Conditionally Positive
(Zainuddin et al., 2020)	Correlated Random Effects	Global	1232	Tradeoff
(Nyanzu et al., 2019)	Multilevel Analysis	Global	1237	Conditionally Positive
(Awaworyi Churchill, 2020)	3 stage least square	Global	1595	Tradeoff
(Wry & Zhao, 2018)	GLS regression	Global	2037	Tradeoff

Better operational efficiency is indicated by the lower operating costs to reduce the cost of the borrower, which affects the sustainability and outreach of MFIs (Gonzalez, 2007). Operating Expense Ratio (OER) is taken as an indicator of operational efficiency in this study as OER has a linkage with the interest rate, which affects operational self-sufficiency (Gonzalez, 2007). Studies have found a significant negative relationship between operational efficiency and depth of outreach (Hermes et al., 2011). Along with that, Zeller and Johannsen (2008) find that attributable to the spill-over effect, those MFIs that go all-out for efficiency have a lower score on outreach to the poor but eventually cause higher poverty reduction than MFIs that score higher on indicators of outreach. Thela (2012) found that microfinance institutions that demonstrated highly on outreach fell behind in sustainability due to operational inefficiency. Abate et al. (2014) attribute the lack of cost-efficiency (financial sustainability) to the inherent ability of microfinance and cooperative institutions. MFIs can have any priority, be it financial sustainability or outreach, which directly affects the production function of any MFI, which in turn also affects the norms of efficiency, making efficiency a distinct and important dimension (Balkenhol, 2007). Based on these evidences, the interaction effect of operational efficiency is taken into consideration.

Although debated for a long time, the relationship has not been established and remains a gap in the study of MFIs (Awaworyi Churchill, 2020; Postelnicu & Hermes, 2018; Wry & Zhao, 2018). This study contributes to the current status quo of the debate and aims to provide evidence and support the findings that this study shows without any preconceived biases. Many findings have shown positive relationships based on many other external criteria (Nyanzu et al., 2019; Postelnicu & Hermes, 2018), which this study addresses by including operational efficiency in the model.

Theoretical Framework

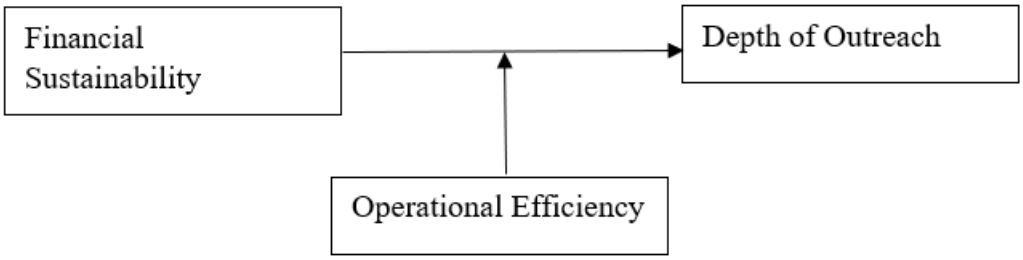
In this study, the relationship between financial sustainability and depth of outreach is examined independently and with operational efficiency as an interacting variable.

Figure 1

Conceptual Framework 1

Figure 2

Conceptual Framework 2



Methodology

Data

Data for this study is extracted from the MIX market (Microfinance Information Exchange, 2019), and the data regarding GDP per capita is extracted from the database of the World Bank. MIX market is the microfinance data service operated by the Microfinance Information Exchange. The data is available on the World

Bank's data catalog for public use, licensed under CC-BY 4.0. This study includes 44 MFIs, which is about 57% of total MFIs, as a sample of this study, and the data collected are an unbalanced panel. The sample was decided based on data available on the MIX market as the MIX dataset is used as the MFI communities universally accept it. Further, though data from 2016 to 2019 is available on the Nepal Rastra Bank website, they are not complete and do not furnish an annual report of each MFI. Figure 3 shows the distribution of sample data, and a major part of the data is concentrated from 2008 to 2015 because most of the MFIs started their operation in this timeframe.

Figure 3

Distribution of Sample Data with Time

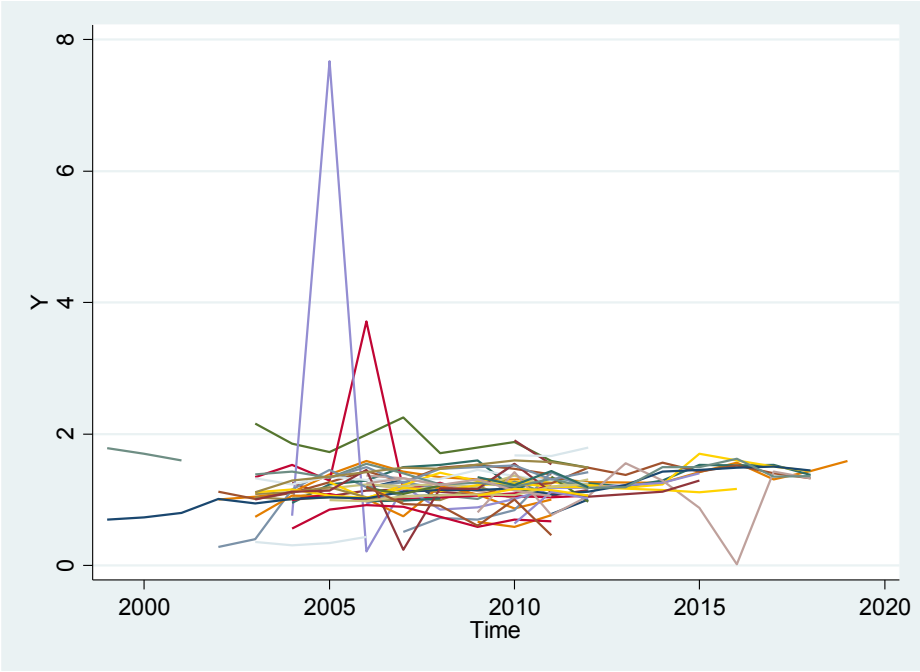


Table 3 shows the number of MFIs included each year in our sample. Our data has only 2 MFI data from 1999-2001; the number of MFI increases along with more MFIs in operations.

Table 3

Description of Panel (No of MFIs per year)

Year	Number of MFIs for which we have data in a particular year	Year	Number of MFIs for which we have data in a particular year
1999	2	2010	35
2000	2	2011	36
2001	2	2012	24
2002	4	2013	6
2003	15	2014	10
2004	22	2015	10
2005	27	2016	8
2006	33	2017	7
2007	32	2018	7
2008	31	2019	1
2009	27	Total	341

Variables

The following proxies are used for the depth of outreach, sustainability and operational efficiency.

Dependent Variable:

Operational Self-sufficiency (OSS)

Operational Self-sufficiency helps to measure whether MFIs are generating enough operating revenue that is required to offset operating expenses, financial costs and loan loss provision or not. If the MFI does not reach its operational self-sufficiency, losses will reduce its equity, resulting in a smaller share available for loans to borrowers (Ledgerwood, 1998).

Independent Variables:

Average Loan Size divided by the GDP per capita (AGDP)

Average loan size per purchasing power is the most common proxy for the depth of outreach (Schreiner, 2002). Although not the perfect measure for the current poverty level, AGDP is a great proxy for the depth of outreach as there is a strong correlation between income level and the size of loans (Quayes, 2012).

Operating Expense Ratio (OER)

The Operating Expense Ratio measures the efficiency of MFIs by comparing the operating cost associated with the portfolio size.

Table 4 shows the formula and significance of the variable/indicator used in this study.

Table 4

The formula of the selected indicators

Indicator	Formula	Significance
Dependent Variable		
OSS	Operating Revenue/(Financial expense + Loan-loss provision expense+ Operating expense)	Measures how well an MFI covers its cost through operating revenues. This variable is a proxy for the sustainability of the MFI
Independent Variables		
AGDP	Average Loan Balance per Borrower/ GDP per Capita	Compares the average loan balance of borrowers as a percentage of GDP per capita to access the reach of MFIs. This variable is a proxy for the depth of the outreach.
OER	Operating Expense/Average gross loan portfolio	Measures the efficiency of MFIs by comparing the operating cost associated with the portfolio size

Source: (Christen et al., 2003)

Regression Model

There are two models examined in this study. The first model will investigate the relationship between OSS and AGDP, and the second model considers the moderating effect of the previous relationship.

Model 1:

$Y_{it} = \alpha_i + \beta_1 X_{it} + c_{it}$

Where,

α_i= Unknown intercept for each entity

Y_{it} = Operational Self-sufficiency where i = Entity and t = time

β_1 = Coefficient relating to the independent variable, X_1, to the outcome, Y.

X_{it} = Average Loan size divided by the GDP per capita and,

c_{it}= Error Term

Model 2:

$Y_{it} = \alpha_i' + \beta_1' X_{1,it} + \beta_2' X_{2.it} + \beta_3' X_{1,it} X_{2,it} + c'_{it}$

Where,

α_i= Unknown intercept for each entity

Y_{it} = Operational Self-sufficiency where i = Entity and t = time

$X_{1,it}$ = Average Loan size divided by the GDP per capita

$X_{2,it}$ = Operating Expense Ratio,

β_2' = Coefficient relating the moderator variable, to the outcome.

β_3' = The regression coefficient for the interaction term, provides an estimate of the moderation effect.

Results

Descriptive Statistics

Table 5 provides a descriptive analysis of the chosen variables. OSS ranges from as low as 0.0144 to 7.6754, with an average of 1.2156. At the same time, the average loan size by GDP per capita has a maximum value of 1.1126 and an average of 0.1076. Moreover, on average, MFIs have 0.4768 of the operating expense ratio, and a successful MFI has OER between 13%-21% (Ledgerwood, 1998), so MFIs of Nepal do not stand in good health in terms of operational efficiency.

Table 5

Descriptive Statistics

Variable	Observation	Mean	SD	Min	Max
Dependent Variable					
OSS	329	1.2156	.4852	.0144	7.6754
Independent Variables					
AGDP	281	.1076	.0870	.0197	1.1126
OER	311	.4768	.6539	.0004	6.9821

Correlation

Table 6 shows the correlational analysis between the dependent variable and explanatory variables. It shows a statistically significant negative relationship with a coefficient of -0.3598 between sustainability and depth of outreach. The correlational coefficient between operational efficiency and depth of outreach is also statistically significant, with the value of -0.2199 showing a negative relationship. The relationship between operational efficiency and sustainability is nearly nonexistent but cannot be concluded due to a lack of statistical significance.

Table 6

Correlational Analysis

Correlation	OSS	AGDP	OER
OSS	1		
AGDP	-0.3598***	1	
OER	0.0241	-0.2199***	1

Note: ***: Significant at a 99% confidence interval

Pooled Regression

The pooled regression results of all the data using all the MFI show that the model is statistically significant at a 99% confidence interval with F statistics of 6.09, and an R-squared value of 0.5481 shows that the independent variables significantly explain the dependent variable.

Wald test for joint effects (Wald, 1943) is done to check if the pooled regression is free from joint effects, but the results show an F statistic of 5.05, confirming that the pooled regression is not free from joint effects. This makes the pooled regression technique obsolete, making the fixed effect model or random effect model a better alternative.

Test for Multicollinearity

To test for multicollinearity, the variance-inflating factor (VIF) is calculated. VIF shows the extent to which the presence of multicollinearity inflates the variance of an estimator. The VIF test shows that explanatory variables included in the study have no multicollinearity problem as the tolerance value is above 0.10, and the VIF is below 10 (Gujarati, 2004).

Test for Normality

The normality test for variables is done with the help of the Shapiro-Wilk test for normal data (Shapiro & Wilk, 1965). Normality ensures that the residuals of variables have minimum variance (Baltagi, 2008). Test results show that all the variables have a p-value of 0.0000, meaning that variables are not normal.

Test for Serial Correlation

Serial correlation in the panel data models biases the standard errors, and it is essential to find the serial correlation in the idiosyncratic error terms (Drukker, 2003). This study uses the Wooldridge test for autocorrelation to test the serial correlation as it is an application for both fixed and random models (Wooldridge,

2002). The results of the test show F statistics of 1.418 and a p-value of 0.244, meaning that the null hypothesis stands and there is no serial correlation in the model.

Hausman Test

With the availability to run a fixed-effects model and a random-effects model, both the regression models are run and subjected to the Hausman test. Hausman test uses two different estimators for the parameters of panel regression, in this case, fixed effect estimators and random effect estimators, and compares which of the two estimators are consistent and efficient (Hausman, 1978). The results of the Hausman test show a chi-square value of 35.87, where a p-value of 0.0000 is achieved, so we reject the null hypothesis meaning that the fixed effects model is a preferred model (Greene, 2012).

Test for Heteroscedasticity

Datasets are further tested for the presence of heteroscedasticity with the help of a modified Wald test for group-wise heteroscedasticity in a fixed effect regression model. The results of this test show a p-value of 0.0000, so we reject the null hypothesis. Hence, the dataset suffers from heteroscedasticity.

Fixed Effect Model Estimation

The analysis shows that our dataset has no autocorrelation but suffers from heteroscedasticity. The variables, although not normal, do not suffer from multicollinearity. So, with the Hausman test showing the fixed effect model as the preferred model, the fixed-effect model of regression has been run. The regression table was then corrected using White's heteroscedasticity-corrected standard errors (robust standard errors) as they can be used to get estimates of the true parameter values (White, 1980), which rules out the problem of heteroscedasticity (Hoechle, 2007).

Tables 7 and 8 provide us with the analysis of the regression of sustainability and depth of outreach of MFIs of Nepal (model 1). The model is statistically significant at a 99% confidence interval, and both the coefficients and intercepts are statistically significant at a 99% confidence interval. The independent variable, depth of outreach, explains 34% of the variation of a dependent variable, sustainability. The study shows a significant tradeoff relationship between sustainability and depth of outreach. The coefficient of the explanatory variable is -3.974, which means one unit increase in depth of outreach has a nearly four-fold

opposite effect on sustainability. The intraclass correlation (rho) is 67%, meaning 67% of the variance is due to the difference across panels. Moreover, this rules out the idiosyncratic error in the regression results.

Table 7

Fit Statistics for Fixed Effect Regression of Model 1

Fit Statistics			
R-Square	0.3481	F-stat	67063
Rho	0.6727	p-value	0.0000

Table 8

Parameter Estimates for Fixed Effect Regression of Model 1

Parameter Estimates				
Variable	Coef.	Robust Std. Err.	t-value	p-value
Intercept	1.658086***	0.4832495	-8.22	0.0000
AGDP	-3.9742***	0.0520131	31.88	0.0000

Note: ***= Significant at 99% confidence interval

Tables 9 and 10 provide the regression results of sustainability, outreach, efficiency, and interaction between outreach and efficiency (model 2). The model and all the variables are statistically significant, and independent variables explain 34% of the variation of the dependent variable. Both depths of outreach and operational efficiency negatively affect sustainability, with coefficients of -4.445 and -0.126. A unit change in AGDP has a 4.445 negative change in sustainability with the efficiency included in the model. So, with operational efficiency in the model, the coefficient of the depth of outreach, even when operational efficiency is zero, has increased.

Furthermore, the interaction effect has a positive effect on sustainability so that whenever the operational efficiency increases, the strength of the negative relationship between sustainability and depth of outreach decreases. This result shows that operational efficiency moderates the relationship between sustainability and depth of outreach. Moreover, a 67% intraclass correlation rules out the idiosyncratic error in the regression results.

Table 9

Fit Statistics of Fixed Effect Panel Regression of Model 2

Fit Statistics			
R-Square	0.3427	F-stat	107.61
Rho	0.67101	p-value	0.0000

Table 10

Parameter Estimates for Fixed Effect Panel Regression of Model 2

Parameter Estimates				
Variable	Coef.	Robust Std. Err.	t-value	p-value
Intercept	1.665192***	0.2686733	-16.55	0.0000
AGDP	-4.44745**	0.0529315	-2.38	0.0220
OER	-0.12606**	1.251794	2.23	0.0310
AGDP*OER	2.797717***	0.0404463	41.17	0.0000

Note: *** = Significant at 99% confidence interval, ** = Significant at 95% confidence interval

Discussion

This paper includes the data solely from the MFIs of Nepal to study the status of the ongoing debate on sustainability and outreach. This study also adds operational efficiency to the model to understand the importance of day-to-day operations in reaching out to the poor and remaining sustainable. The descriptive statistics show a large variation in OSS, which can be attributed to the fact that some MFIs have a wide span of coverage up to 77 districts while some are operational only in 2 districts. On average, the financial sustainability of the MFIs of Nepal is well over par as the MFIs have generated enough revenue to cover their direct costs. Moreover, it can be suggested that although microfinance is supposed to target the underprivileged community, the reach of microfinance may not have reached the poorest of the poor. This is because the literature shows that in Nepal, the richest 20% hold 56.2% of all wealth and the poorest 20% hold 4.1% of total wealth, and on average, 28.6% of the total population is multidimensionally poor, and the richest 10% earn three times more than three times the poorest 40% (HAMI & Oxfam, 2019). Overall, operational efficiency and sustainability are on a safer side than the industry standards (Consultative Group to Assist the Poor (CGAP), 2003).

Operational efficiency was found to be negatively related to sustainability. Even financially sustainable institutions could face lower operational costs due to efficiency and contextual factors like higher population density, the higher debt absorption capacity of clients, homogenous clients, group liability, and greater competition. Along with that, financially sustainable institutions are technically inefficient because of grants and subsidies (Balkenhol, 2007), and access to capital funds is found to be adequate in Nepalese MFIs (Dhakal, 2007). Nevertheless, the interaction of outreach and operational efficiency shows a positive relationship; this can be explained as the cost of smaller loans to the impoverished clientele is higher, and the revenues fall shorter. Hence, to increase sustainability, either fund needs to be increased using the subsidy or cost needs to be decreased, increasing the efficiency, and this can be achieved only by ensuring that at the outreach level, the cost is reduced. These findings were in alignment with the findings of Cull et al. (2007), Awaworyi Churchill (2020) and Zainuddin et al. (2020).

In contrast to Nurmakhanova et al. (2015), the results of this study show that focusing on increasing the depth of outreach has a significant negative effect on the sustainability of the MFIs. The empirical results also show a tradeoff between operational efficiency and sustainability, but the interaction of outreach and operational efficiency positively affects sustainability. So, increased outreach with increased operational efficiency positively affects sustainability. Hence, given that the MFIs have good operational efficiency, the win-win situation of sustainability and outreach can be accomplished.

The tradeoff relationship between sustainability and outreach could be attributed to the increased cost of reaching poor clients. The establishment of new centers and branches in remote areas have greater operating cost for MFIs; Besides, the greater small average loan balance per borrower also adds to the greater processing costs and, in turn, affects sustainability. However, with better operational efficiency, these costs can be cut down and, in turn, aid in the sustainability of the organization. Better operational efficiency cuts down the processing time of loans, thereby decreasing the cost per loan, and also monitors whether the loans are utilized productively or not. So, the positive relationship between outreach and sustainability could be achieved by maintaining a better operational efficiency of the organization. This finding is aligned with Purwanto et al. (2020) and Zeller and Johannsen (2008), which show that MFIs that focus on

operational efficiency have a large spill-over effect resulting in higher poverty reduction at the macro level.

However, the depth of outreach indicator shows room to improve. Given the negative relationship between sustainability and outreach, sustainability well over par the industry standards provide a way to improve the depth of outreach of MFIs in Nepal. These findings have major policy implication as it provides concrete evidence that the target of MFIs should not be limited to the only dimension like that of reaching out to the poor since it has a significant effect on sustainability. Hence, before enforcing policies in reaching the poor, operational efficiency standards should be maintained to make sure sustainability is impacted positively.

Limitations

The major limitation of this study is the lack of Nepal's MFIs in the dataset. Out of all the MFIs in Nepal, about 57% of the total MFIs have been used in this study. For this study, the fixed-effects model has been used, limiting the study to the time-invariant variables; time-variant variables are not included as a dummy variable to reduce the noise in the model. This study has not considered the coronavirus impacted years as they are subject to a different study to find out how the pandemic impacted the debated relationship between outreach and sustainability.

Conclusion

The policymakers have recognized Microfinance Institutions in Nepal as a tool for poverty alleviation. To fulfill the aim of poverty reduction, the social mission of MFIs to reach the underprivileged has implications for the sustainability of MFIs. Therefore, the regulators need to understand the status of these essential dimensions and the relationship between them to formulate to meet their aim. Furthermore, the policymakers need to ensure that their regulatory standards consider the interaction of other dimensions, such as operational efficiency.

It is recommended that further study be carried out using composite indicators incorporating other essential indicators of sustainability, depth of outreach, and operational efficiency. In addition to controlling the influence of external factors such as governmental policies, economic situation, and geography, the regional distribution could help isolate the actual impact of these variables. This study did not venture into these variables as the richer dataset needed for the investigation was hitherto unavailable. Further, the impact of COVID-19 on the relationship could be studied for immediate policy actions.

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