What Drives Microfinance Provider's Financial Sustainability: The Moderating Role of National Governance Indicators (NGIs)

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Abstract

Microfinance providers have been known to provide programs to reduce poverty in rural areas. However, they are still facing the issue of sustaining the operations on a long-term basis. This study investigates the impact of organizational structure, outreach, leverage, liquidity, and operating cost on the financial sustainability of microfinance providers in South Asia, moderated by national governance. A financial sustainability index has been developed by using Principal Components Analysis (PCA), considering both conventional (ROA & ROE) and efficiency (OSS and FSS) measures. This study uses the two-step system GMM estimates to examine the impact of factors affecting the financial sustainability of microfinance providers in South Asia, covering 85 MFPs from India, 34 from Pakistan, and 30 from Bangladesh from 2006 to 2018. The finding reveals a strong and significant relationship between financial sustainability and its determinants. The average loan per borrower has a significant positive, and the cost per borrower has a significant negative impact on financial sustainability. Further analysis demonstrated that national governance indicators significantly moderated the association between financial sustainability and its determinants. The finding indicates that microfinance banks are more sustainable than non-bank microfinance providers. Further results reveal that GDP and inflation significantly impact the financial sustainability of microfinance providers in South Asia.

Introduction

Poverty reduction and sustainability are the two major issues that must be addressed to achieve sustainable development (Ballester, 2021). Poverty leads to corruption, black money, injustice, robbery, illiteracy, and child labor, and especially in South Asian countries, it is increasing at an alarming rate (Hameed et al., 2021). The microfinance sector has emerged as an essential catalyst for socioeconomic development and financial inclusion. In contrast to the formal banking system, it provides small uncollateralized loans through innovative lending strategies such as group lending and progressive lending (Sangwan & Nayak, 2020). Microfinance has received considerable attention from donors and NGOs as a financially self-sustaining instrument to reduce poverty (Mosley & Hulme, 1998). The concept of financial sustainability is grounded in the Profit Incentive Theory (PIT), which is aligned with the Institutionalist paradigm. This theory supports microfinance institutions (MFIs) in their efforts to thrive by maximizing revenue and minimizing operational costs in order to cover expenses and build surpluses. PIT seconds the argument that the donor's funding is limited in amount and thus cannot fund MFI on a large scale given the increasing demand for microfinance. As a result, they chose outreach depth expansion over sustainability by charging extra lending fees to the poorest and most rural clients (Bogan, 2012).

Githaiga (2021) stated that there are around 10,000 microfinance providers operating globally. According to the Microfinance Barometer (2019), 139.9 million people have benefited from the sector till 2018, where 80% are women and 65% are from rural areas. The annual growth rate for the last five years has been recorded at 11.5%, while the number of borrowers has increased by 7% since 2012. Overall, the number of borrowers increases at a steady rate of 5.6 % every year, and the gross loan portfolio grows at a rate of 15% annually (Akter et al., 2021). The estimated credit portfolio is 124.1 billion USD. ROA increased by 1.3 points and ROE by 2.9 points. A slight decrease has been noted in the industry's performance. The cost per borrower has increased by 56%, from 68.4 USD in 2009 to 106.7 USD in 2018. Portfolio quality slightly declined as PAR>30 days increased from 6.4% in 2009 to 7% in 2018. A 2.7 points increase has been noted in the operating expense ratio. South Asia dominated the microfinance industry. As of 2018, the number of borrowers in South Asia was 85.6 million, and a significant majority of them – 89% - were women. The total outstanding credit portfolio was 36.8 billion USD, the second largest after Latin America at 48.3 billion USD.

According to Maas & Bel (2018), microfinance has been a vital instrument in increasing the welfare of poor people during the last decade. There are approximately 200 million micro-small and medium enterprises (MSMEs), which do not have access to credit facilities. The gap between what these MSMEs need and what has been provided has reached USD 2.2 trillion. Although governments and NGOs support it, microfinance is still facing various challenges. The most recent concept, which is being used worldwide and considered one of the critical indicators of the country's overall economic health, is good governance, which can be achieved by using state machinery efficiently and effectively. The national governance indicators significantly influence the performance and efficiency of the financial sector (Chortareas et al., 2012).

Sustainability has emerged as a significant global issue, and in the case of ignorance, it leads the institution to a substantial financial loss and a reputational loss in the market

(Jamwal et al., 2021). Unlike developed countries, which have achieved sustainability in their industrial sector, sustainability practices in developing countries or emerging economies are still limited (Jamwal et al., 2021). Good governance positively moderated the association between intellectual capital and the financial efficiency of microfinance intuitions (Ahamad et al., 2022).

Literature Review

Financial sustainability refers to how well microfinance providers (MFPs) operate with or without subsidies on a long-term basis (Kar, 2020). In evaluating the performance of MFIs in the recent era, financial performance is getting more attention than other aspects of performance measures of MFIs (Akter et al., 2021). Financial sustainability is continually a debatable topic, especially between the two approaches, i.e., Welfarist and Institutionalist approaches. The Welfarist approach claims that the success of the MFI has been shown by the number of poor people served by the MFI. This theory is based on the premise that the establishment of MFI is to reduce poverty by empowering the poorest of the economically active poor (Marwa & Aziakaono, 2015; Chattopadhyay & Mitra, 2017). The Institutionalist approach suggests that MFIs need to create sustainable intermediation. For the better provision of financial services to reduce poverty, MFIs need to be sustainable (Bhanot & Bapat, 2015; Chattpadhyay & Mitra, 2017). The Institutionalist states that only financially sustainable MFIs can provide financial services on a long-term basis to poor people. Moreover, subsidies, donations, and grants ultimately stimulate the financial system (Morduch, 2000). According to Rajdev & Bhatt (2016), the Institutionalist approach dominates the microfinance industry. Hence, the bottom line of both schools of thought is the same, i.e., to provide financial services to the poorest part of society.

Welfarists focus more on poverty reduction with the help of donations and subsidies. In contrast, Institutionalists focus on providing financial services to the poor (instead of the poorest) on a sustainable basis with the help of revenue generated through microfinance operations. The theoretical foundation for financial sustainability is the Profit Incentive Theory (PIT), under the paradigm of the Institutionalist approach. Profit Incentive Theory (PIT) suggests that poverty can be reduced with sustainable MFPs. In concurrence with the Institutionalist paradigm, the PIT seconds the argument that the donor's funding is limited in amount and thus cannot fund MFIs at a mega-scale given the increasing demand for microfinance. This theory supports MFIs' efforts to maximize revenue, reduce operational costs, cover expenses, and build surpluses. According to Bogan (2012) and Aghion & Morduch (2005), MFIs that rely on grants and subsidies do not respond to profit maximization and cost minimization pressure. As a result, they prioritize outreach depth over efficiency by serving the poorest and most rural clients, who incur additional lending costs.

Historically, MFIs depend on donations, yet their sustainability is doubtful, as donations alone are inadequate (Akter et al., 2021). According to Parvin et al. (2020), MFIs must attain financial and social goals. Saad et al. (2018) mentioned that MFIs must be independent of gifts, grants, subsidies, and donations. The Institutionalist approach simultaneously focuses on financial sustainability and poverty reduction, and the Welfarist approach emphasizes reaching the poor through subsidized funds (Saad et al., 2018). Various studies show the existence of a trade-off between MFI's social

and financial goals. More emphasis on profitability and sustainability through aggressive commercialization is likely to jeopardize MFIs' social mission of reaching society's poorest (Churchill 2018). When operational capabilities are used well, MFIs are more likely to be long-lasting, effective, and sustainable, which can lead to a greater reduction in poverty (Remer & Kattilakoski, 2021).

To achieve the dual objectives of MFIs, they need to address their financial sustainability and outreach (Mekonnen & Zewudu, 2019). After achieving operational sustainability, MFIs can cut their lending interest rates to fulfill their social mission of poverty reduction. Therefore, MFIs must have a trade-off between social and financial performance (Abrar, 2019). Governments need to support MFIs financially by subsidizing them to achieve their social objective of poverty reduction (Rizkiah, 2019). It is challenging to operate MFIs like normal financial institutions because MFIs incur much higher operational costs due to the nature of their customers. The costs associated with customers or borrowers include the costs of assessment, transaction, service and delivery, and monitoring for every transaction.

Javid & Abrar (2015) provided proof of the trade-off between financial sustainability and outreach in MFIs. The size, capital structure, and profit of MFIs are positive contributors. The depth of outreach is negatively related to outreach costs and sustainability positively. Bos & Millone (2015) and Lepetit & Nzongang (2014) found a trade-off between social and financial performance. Hartarska et al. (2013) noted the existence of a trade-off between outreach and sustainability. MFIs need to sustain their operations long-term without increasing the interest rate on loans or reducing the level of financial services to the poor (Parvin et al., 2020). Memon et al. (2020) concluded that women as borrowers, board members, and managers significantly negatively impact the financial sustainability of MFIs. Naz et al. (2019) found that the main things that affect the performance (profitability and sustainability) of MFIs in Pakistan are their size, portfolio risk, cost efficiency, yield on the loan portfolio, and average loan size.

Ahmad et al. (2019) stated that the microfinance sector of Pakistan has adopted comprehensive and costly growth strategies; as a result, they found significant growth but failed to meet the targets. Their financial sustainability level is weak and needs to be addressed. Henock (2019) concluded that there is no trade-off between financial self-sufficiency and outreach. Reducing the cost of capital with an increase in capital through deposit mobilization can strengthen the financial suitability of MFIs (Duguma & Han, 2018). Shakodra (2019) concluded that the size, age, and GDP of the MFIs significantly impact the financial performance of MFIs. According to Sadiq & Burki (2018), financing charges and the outreach proportion of female lenders significantly describe the financial sustainability of MFIs. For long-term sustainability, MFIs need to adjust their interest rates charged on microloans to manage delinquency, grants, donations, cost per borrower, operating expense, gross loan portfolio, and return on assets ratio (Gonfa, 2019). Hossain & Khan (2016) noted that the capital-asset ratio, operating expense ratio, and write-off ratio affect the financial sustainability of Bangladesh's MFIs. The size of the firm, the firm's age, saving to total assets ratio, borrowers per staff member, debt to equity ratio, percentage of female borrowers, and outstanding loans to total assets ratio do not affect the financial sustainability of the MFIs. Bayai & Ikhide (2016) found that subsidies are responsible for inefficiency, spurring distortions, and harboring dependency syndrome, and subsidies are additive to financial sustainability with a threshold limit.

In short, there is a lack of study on the sustainability of MFIs, specifically in developing countries context. There is a need to investigate different factors and their impacts on MFIs' sustainability; we need to find the answer to the questions, i.e., why MFIs are less efficient. Why is poverty still high? Hence, this study examined the relationship between financial sustainability and different factors under the moderating effect of NGIs in the South Asian context.

National Governance Indicators

According to the United Nations Development Program (UNDP), governance comprises specific mechanisms to examine the country's political, economic, and administrative affairs. The concept of good governance has got considerable attention in the current scenario. It has been considered one of the key indicators of a country's overall health (Drebee et al., 2020). Kaufmann et al. (1999) define the term as "the traditions and institutions by which authority in a country is exercised." National governance indicators are the most widely used indicators for comparing and measuring the quality of governments worldwide and were developed by (Kaufmann et al., 1999). It includes six dimensions: Voice & Accountability (VA), Political Stability and Absence of Violence/Terrorism (PS), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (RL), and Control of Corruption (CC) (Absadykov, 2020). Institutional development, measured by six dimensions of good governance, has a significant relationship with the central bank's independence, involvement in prudential regulations, and supervisory unifications (Anastasiou et al., 2019). Thrikawala, Locke, & Reddy (2017) noted that NGIs have a significant impact on the financial performance of MFIs in Sri Lanka and Indian contexts.

Methodology

To attain the objectives of this study, an unbalanced panel data set has been used. The data has been collected from the microfinance sectors of Pakistan, India, and Bangladesh. The latest available data is extracted from the MIX market database of the World Bank for the period 2006–2018. The World Bank's website and Worldwide Governance Indicators (WGI) have extracted data for control variables and national governance indicators. The following Table 1 contains methods used to measure variables along with the references from the previous studies where those methods have been used.

Table 1: Measurement of Variables

Variables	Descriptions	Operationalization	References
Financial Sustainability	The ability of the firm to cover its cost from its own generated income, whether subsidized or not.	Financial sustainability Index	(Bhanot & Bapat, 2015; Saad et al., 2019)
Organizational Structure	A different form of microfinance providers	Microfinance banks & Non-banks MFIs	(Mumi, Joseph, & Quayes, 2018)
Growth Outreach	Expansion of the MFPs concerning borrowers, GLP and Average loan size	No of active borrowers, Average Loan Size, Gross Loan Portfolio	(Rauf & Mahmood, 2009)

Women Empowerment	To give women more control over their life.	Percentage of women borrowers	Memon et al., 2020
Liquidity	The ability of the MFPs to meet the short-term demand of funds.	Shorter term Asset/Short term liabilities	(Gietzen, 2017)
Leverage	It is a measurement of the relative level of debt.	Debt to Equity ratio	(Bayai & Ikhide, 2018; Githaiga, 2021; Tehulu, 2013)
Cost Efficiency	It is the level of operating cost used per Brower during operation	Cost / Number of Active borrowers	(Aziz & Aziz, 2019; Mekonnen & Zewudu, 2019)
National Governance Indicators	Six dimensions describe the overall performance of the national governance	Voice & accountability, Political Stability, Government effectiveness, Regulatory Quality, Rule of Law & Control of Corruption.	(Ahamad et al., 2022; Kamarudin & Aina, 2020; Khan & Zubair, 2014; Thrikawala et al., 2017)

Development of Financial Sustainability Index

Principal Components Analysis (PCA)

Factor analysis has been used to determine the components of PCA and examine the data series' similarities (Asteriou & Price, 2001). Saad, Bhuiyan, & Taib (2021) developed a mix of technical variables out of the initially available variables. The financial sustainability index has been developed based on the loadings of the variables. The basic conditions for factor analysis include, firstly, that primary components are not correlated, i.e., the correlation between variables is not more than 0.90 (Asteriou & Hall, 2007). Secondly, component one has the maximum proportion of the total variations of the group of available variables and components, the second component has the maximum of the remaining components, and so on. To overcome the shortcomings of the index developed by (Bhanot & Bapat, (2015) and Saad et al. (2019), this study estimated the financial sustainability of the MFPs by using the following equations.

$$FSI_{it} = w1\text{Conventional Ratios} + w2\text{Efficiency Ratios} \tag{1}$$

$$\text{or}$$

$$FSI_{it} = w1ROA_{it} + w2ROE_{it} + w3OSS_{it} + w4FSS_{it} \tag{2}$$

Measuring Weights Using Principal Components Analysis

The weights were assigned to different indicators based on their importance by using PCA. Four indicators have been used to determine the financial sustainability index scores for the respective years used during the analysis. The loading for each of the variables is obtained by using PCA.

Table 2 shows that the pair-wise correlation between variables is low. Taking the Asteriou and Hall (2007) coefficient value of 0.9 as the benchmark, it has been concluded that correlations among primary variables used for PCA are not problematic.

Table 2: Correlation Matrix of PCA

Variable	ROA	ROE	OSS	FSS
ROA	1.000			
ROE	0.426	1.000		
OSS	0.568	0.312	1.000	
FSS	0.061	-0.017	0.034	1.000

Table 3: Principal Components of PCA

	Eigenvalue	Difference	Proportion	Cumulative
Components 1	1.882	0.877	0.471	0.471
Components 2	1.005	0.305	0.251	0.722
Components 3	0.701	0.289	0.175	0.897
Components 4	0.412		0.103	1.000

Table 3 shows the Eigenvalue and proportion of variations caused by each component in the group. Component number one has the maxim proportion of variations of 47.01% out of the total variations, component two has 25.10%, component three has 17.50%, and component four has a 10.30% variation proportion. Table 3 shows that components one and two have the maximum Eigenvlaue which is above 1; hence it is used for calculating the score of FSI.

Table 4: Loading of the Components of PCA

Variables	Comp1	Comp2	Comp 3	Comp4	Unexplained
ROA	0.628	0.030	-0.174	-0.758	0
ROE	0.510	-0.158	0.814	-0.228	0
OSS	0.586	0.015	-0.534	-0.609	0
FSS	0.054	0.987	0.143	0.050	0

The weights for each variable assigned to component one are used to develop an index. By assigning weights to the respective indicators, equation 2 takes the following form.

$$FSI_{it} = (0.628)ROA_{it} + (0.510)ROE_{it} + (0.586)OSS_{it} + (0.054)FSS_i \qquad (3)$$

Model Specification

In generalized form, the following dynamic model has been used in line with Githaiga (2021, and Thrikawala et al. (2017).

$$\log Y_{i,t} = \beta_0 + \beta_1 \log(Y_{it} - 1) + \beta_2 X_{it} + \beta_3 Z_{it} + \beta_4 \eta + \mu_i + \varepsilon_{i,t} \qquad (4)$$

Where **y** is the dependent variable, $y_{i,t-1}$ is the lagged level of the dependent variable, **x** represents the independent variables, and **z** is the control variable. The symbol η and μ_i denote a time-specific and county-specific effect, respectively, and $\varepsilon_{i,t}$ is the error term.

In the current study, the specified dynamic panel model has been captured by including lagged-financial sustainability (a dependent variable) as one of the independent variables. However, an endogeneity problem has been created by including a lagged dependent variable in the model; the correlation of the right-hand-side variables with the error terms. The traditional panel estimators are inefficient in resolving the endogeneity issue; hence, the present study adopts the dynamic Generalized Method of Moment (GMM) estimator technique as its econometric method. In the first section, GMM has been used to achieve the study's primary objective: the relationship between financial sustainability and its determinants. Similarly, in the second stage, GLS was used for moderation analysis following the study (Maimun et al., 2021).

Results

Descriptive Statistics

Table 5 presents summary statistics, which shows the basic features of the variables. It includes; the number of observations, mean values, standard deviation, minimum and maximum values of the variable included in the analysis.

Table 5: Descriptive Statistics

Var.	Obs.	Mean	Std. Dev.	Minimum	Maximum
FSI	1518	5.460	0.440	1.720	6.710
ALPB	1518	153.68	145.03	0.030	2,970.46
NAB	1518	424,176	1,138,391	382	8,934,874
PWB	1518	0.880	0.352	0.002	10.772
Lqdt	1518	4.580	14.815	0.006	384.439
DER	1518	6.965	29.963	-0.050	655.573
CPB	1518	22.14	44.74	0.080	995.37
GDP	1518	0.062	0.016	0.016	0.085
INF	1518	0.074	0.032	0.025	0.203
VA	1518	-0.055	0.541	-0.950	0.462
PS	1518	-1.466	0.598	-2.810	-0.765
GE	1518	-0.321	0.381	-0.825	0.284
RQ	1518	-0.536	0.228	-1.001	-0.227
RL	1518	-0.368	0.392	-0.969	0.177
CC	1518	-0.631	0.303	-1.434	-0.183

Table 5 presents the summary statistics of the data of the microfinance sector of South Asia. It shows that the mean value of FSI is 5.460, and the maximum value is 6.710, which shows that most MFPs have high FSI values. The standard deviation of 0.440 shows that most of the data set is closer to the mean value. In other words, from the above statement, we can estimate that 95% of the value of FSI falls in the range of 5.460-(2*0.440) to 5.460+ (2*0.440) or between 4.580 and 6.340. The total number of observations for South Asia is 1,518. Similarly, the mean value of the average loan per borrower and the number of active borrowers show that most MFPs have a larger loan size and a larger number of active borrowers. The standard deviation (SD) shows that most data points are closer to the mean value. Similarly, the table presents the summary statistics for the other variable also.

Correlation Matrix

The Correlation Matrix is reported in research studies to identify the correlation and multicollinearity among the explanatory variables. Asteriou & Hall (2007) states that researcher appear to believe that a correlation coefficient of more than 0.9 between variables may be problematic in estimation.

Table 6: Correlation Matrix

Var.	FSI	OS	LALPB	LNAB	LGLP	PWB	Lqdt	DER	LCPB
FSI	1.000								
OS	-0.066	1.000							
LALPB	0.125	0.187	1.000						
LNAB	0.231	0.175	0.080	1.000					
LGLP	0.255	0.227	0.445	0.928	1.000				
PWB	0.155	-0.429	-0.290	0.158	0.034	1.000			
Lqdt	0.008	0.172	0.157	-0.118	-0.047	-0.169	1.000		
DER	-0.085	-0.018	-0.099	-0.035	-0.069	0.028	0.003	1.000	
LCPB	-0.219	0.268	0.655	-0.199	0.066	-0.512	0.151	-0.103	1.000
Size	0.224	0.306	0.421	0.898	0.964	-0.072	-0.026	-0.084	0.160
GDP	0.147	-0.157	-0.020	0.169	0.144	0.409	-0.012	0.038	-0.293
Inf	-0.113	0.061	-0.353	-0.115	-0.234	-0.079	-0.080	-0.028	-0.091
VA	0.047	-0.115	-0.352	0.035	-0.099	0.528	-0.027	0.058	-0.585
PS	0.132	-0.212	-0.157	0.207	0.128	0.599	-0.067	0.059	-0.486
GE	0.030	-0.051	-0.217	-0.020	-0.099	0.386	0.031	0.031	-0.451
RQ	-0.034	0.036	-0.164	-0.124	-0.173	0.198	0.072	0.022	-0.317
RL	0.034	-0.073	-0.280	-0.008	-0.111	0.448	0.006	0.057	-0.521
CC	0.041	-0.052	-0.102	-0.012	-0.049	0.357	0.047	0.038	-0.380

Table 6 shows that the independent variables' overall pair-wise correlations are relatively small. Hence, multicollinearity should not be a major concern in this study in the case of independent variables except LGLP and size. Pair-wise correlation coefficients among the variables such as size with LNAB and LGLP are more than 0.9 and are highly correlated. The correlation table also shows the direction of the relationship between the variables.

Table 7: Correlation Matrix

Var.	Size	GDP	Inf	VA	PS	GE	RQ	RL	CC
Size	1.000								
GDP	0.063	1.000							
Inf	-0.189	-0.409	1.000						
VA	-0.192	0.523	-0.082	1.000					
PS	0.020	0.711	-0.321	0.780	1.000				
GE	0.183	0.474	-0.203	0.899	0.660	1.000			
RQ	-0.227	0.252	-0.120	0.755	0.387	0.921	1.000		
RL	-0.196	0.489	-0.144	0.953	0.716	0.947	0.868	1.000	
CC	-0.133	0.483	-0.313	0.854	0.674	0.944	0.891	0.927	1.000

Table 7 shows the pair-wise correlation between moderating variables and control variables. Moderating variables have a high correlation, as shown by the pair-wise correlation between Political Stability (PS) and Voice and Accountability (VA), Government Effectiveness (GE) and VA, and Regulatory Quality (RQ) and GE. The pair-wise correlation of Rule of Law (RL) with VA, PS, GE, and RQ is also high. Control of Corruption (CC) with VA, GE, RQ, and RS is highly correlated. Hence, moderating variables have not been included in the main model due to their high collinearity. The moderating effect of these indicators has been examined individually using the Generalized Least Square GLS method.

Endogeneity

It is a situation where the independent variable is correlated to its error term. The presence of endogeneity is one of the main assumptions of running the GMM model. A test has been conducted to check endogeneity with the null hypothesis that the variables are exogenous.

Table 8: Endogeneity Test

	Test of endogeneity (orthogonality conditions)	Test of overidentifying restriction
Null Hypothesis	Variables are exogenous	Instruments are valid
Statistic	GMM C Stat chi2(2) = 8.31086	Hansen's J chi2(4) = 2.95285
Significance	(p = 0.0157)	(p = 0.5657)

Table 8 shows the results of tests for endogeneity. From the table, we noted that the p-values are significant at a 5% significance level; hence, we concluded that endogeneity exists in the model. System GMM has been used as a remedial measure to address the issue of endogeneity and attain the study's main objectives.

Two Steps System GMM

In the presence of endogeneity, heteroskedasticity, and serial correlation, a two-step system GMM estimator exploiting a weighting matrix, using residuals from the first step (Ahamad et al., 2022; Githaiga, 2021; Thrikawala et al., 2017). It is an augmented two-step difference GMM. It is more robust than one step system GMM. It is more efficient and robust in heteroskedasticity and autocorrelation (Rodman 2009).

The above summary Table 9 shows the two-step system GMM estimation results. The analysis has been run twice, i.e., with the model's inclusion and exclusion of control variables. It has been noted that a total of 1,362 observations were analyzed during the analysis. The number of instruments is 57, and the number of groups is 148 for the model. The overall model goodness of fit test (F-statistics) has a significant value of 0.000, indicating that the fit is good. The Hanson test (0.814) and Sargan test (0.978) show that the instruments are valid and the model is well specified. The insignificant AR (2) test (0.708) confirmed the model's absence of the 2nd order autocorrelation.

Table 9: Summary of the System GMM Results (Dep. Var: FSI)

Variables	Without Control Variables Coefficient	With Control Variables Coefficient	Long-run Estimation
FSI_1	0.011***	0.009***	
	(2.94)	(5.94)	
Organizational Structure (OS)	-0.151***	-0.175***	
	(-4.24)	(-3.66)	
Average Loan per Borrower (ALPB, log)	0. 486***	0.514***	0.518***
	(19.31)	(16.45)	(16.38)
Number of Active Borrowers (NAB_log)	0.428***	0.459***	0.463***
	(21.00)	(20.17)	(20.27)
Percentage of Women Borrowers (PWB)	0.114**	0.170**	0.171**
	(2.39)	(2.52)	(2.52)
Liquidity (Lqdt)	0.004	0.008**	0.008**
	(1.60)	(2.19)	(2.19)
Debt to Equity Ratio (DER)	0.005***	0.007***	0.007***
	(3.01)	(3.07)	(3.07)
Cost Per Borrowers (CPB), log	-0.080***	-0.121***	-0.122***
	(-3.12)	(-3.49)	(-3.49)
GDP		-6.417***	-6.475***
		(-3.47)	(3.47)
Inflation		-1.079**	-1.089**
		(-2.18)	(-2.18)
F(10,147)	161967.24	118796.11	
Prob > chi2	0.000	0.000	
Groups/Instruments	148/56	148/57	
AR(2)	0.625	0.708	
Sargan test	0.982	0.978	
Hansen test	0.188	0.814	
No. of Observations	1362	1362	

Notes: ***, **, * denote significant at 1%, 5% and 10% respectively

From the summary Table 9, it has been noted that the p-values of all the explanatory variables FSI_1, OS, ALPB_log, NAB_1og, PWB, Lqdt, DER, CPB_log, and control variables GDP and inflation are less than 0.05 (5%). It shows that these variables significantly affect the dependent variable of financial sustainability in the microfinance sector of South Asia. From the individual significance test t-statistic, it has been noted that t-statistic values for all independent and control variables are more than the critical value of 1.96 in absolute form, showing the relationship's significance.

Hence, from both p-value and t-statistic, it has been concluded that there are significant relationships between independent variables, control variables, and financial sustainability of the MFPs in South Asia. Two-step GMM is a short-run estimation. Hence, we tested all the significant relationships in the short run to generate long-run relationships. All of the explanatory and control variables, which have significant relationships with financial sustainability in the short-run, also have a p-value of less than 0.05 (5%) significant level in the long run. It shows that all the relationships are significant in the long run also.

The current year's financial sustainability of MFPs and next year's financial sustainability of MFPs exhibit a significant positive relationship. However, there is a significant negative relationship between the organizational structure and the financial

sustainability of the microfinance providers. Similarly, average loan per borrower (ALPB) and financial sustainability exhibit a significant positive relationship. The positive result indicates that the financial sustainability of MFPs is more or less dependent on higher loan size, even if it has no more effects than increasing scale (number of borrowers) (Mekonnen & Zewudu, 2019). It indicates that microfinance profitability is associated with higher loan sizes since larger loans are associated with higher cost efficiency and profitability. The finding substantiates the mission drift, where MFIs serve relatively non-poor clients. The finding is also in line with Ganka (2010), Adongo (2005), and Stork (2006), that profitability relates to selling bigger loans. However, Cull et al. (2007) argued that institutions that make smaller loans are not less profitable on average compared to those making bigger loans. They concluded that profitability and depth of outreach could not be attained simultaneously.

Moreover, there is a significant positive relationship between the number of active borrowers (NAB) and the financial sustainability of the microfinance providers in South Asia. The positive result is also validated by Kumar (2011), Zerai and Rani (2012), who argue that increasing the number of borrowers can decrease the cost incurred per borrower and can boost the economy of scale, which can improve the overall financial performance of MFPs (Mekonnen & Zewudu, 2019). A significant positive relationship has been noted between the percentage of women borrowers' (PWB) and financial sustainability. According to Ghosh & Guha (2019), women are more efficient than men concerning loan utilization and repayment. An increase in the number of women increases the operational self-sufficiency of microfinance institutions (Ghosh & Guha, 2019). According to Skarlatos (2004), cited in Mekonen & Zewudu (2019), low-income female borrowers have lower default rates than male borrowers. Similarly, women use their loans in a well-planned manner. Hence, this specifies lower arrears and loan loss rates, which have a significant positive impact on the financial sustainability of MFPs (Mekonnen & Zewudu, 2019).

Liquidity and leverage ratios have a significant positive relationship with the financial sustainability of MFPs at 5% significance. However, cost per borrower negatively affects the financial sustainability of MFPs in South Asia. On average, the relationship is significant at a 1% significance level, ceteris paribus. The negative result shows that the role of cost reduction gets better financial sustainability for microfinance providers (Mekonnen & Zewudu, 2019). The result indicates that an increase in cost per borrower reduces the financial sustainability of microfinance providers. This result is in line with Ganka's (2010) findings. Control variables like GDP and inflation negatively impact the financial sustainability of the MFPs. Hence, the overall result shows that all of the explanatory variables of the model significantly affect the financial sustainability of the MFPs of South Asia.

Robustness Check

The results from the preceding section are subject to a robustness check. In this test, additional variables, i.e., Capital Adequacy Ratio (CAR), were included in the model to see if the results are subject to the number of independent variables.

Table 10 shows the system GMM results after including a new variable in the model. The results passed the Hanson and Sargan tests of over-identifying restrictions and the Arellano-Bond test of autocorrelation. These results suggest that the reported results in

the preceding sections are robust. They are not sensitive to the addition of other control variables.

Table 10 Summary of the System GMM Results (Dep. Var: FSI)

Variables	Coefficients	t-statistic
FSI_1	0.010***	5.54
Organizational Structure (OS)	-0.156***	-3.05
Average Loan per Borrower (ALPB, log)	0.503***	15.18
Number of Active Borrowers (NAB_log)	0.451***	18.12
Percentage of Women Borrowers (PWB)	0.156**	2.29
Liquidity (Lqdt)	0.007**	1.84
Capital Adequacy Ratio (CAR)	-0.184***	-4.14
Debt to Equity Ratio (DER)	0.006***	2.53
Cost Per Borrowers (CPB), log	-0.117***	-3.25
GDP	-6.267***	-3.44
Inflation	-1.195**	-2.47
F(10,147)	100657.57	
Prob > chi2	0.000	
Groups/Instruments	148/57	
AR(2)	0.691	
Sargan test of overid. Restrictions: chi2(45)	0.971	
Hansen test of overid. Restrictions: chi2(45)	0.801	
No. of Observations	1362	

Notes: ***, **, * denote significant at 1%, 5% and 10% respectively

Moderation Analysis

It has been noted from the preliminary test for multicollinearity and pair-wise correlations that there was a high correlation between moderating variables. Moderation analysis has been done through Generalized Least Square (GLS) regression.

Table 11 shows the summary of the moderation analysis. From the table, it has been noted that all six indicators of national governance (NGIs) have a significant moderating effect on the relationship of organizational structure (OS), average loan per borrower (ALPB), and cost per borrower (CPB) with the financial sustainability of the microfinance providers in South Asia. Voice & Accountability (VA) significantly moderated the relationships between OS and FSI at a 1% significance level, LALPB and FSI at 5%, and LCPB and FSI at a 1% significance level positively. VA moderated the relationship between PWB and FSI at a 5% significance level and DER and FSI at a negative 1% significance level. Political Stability (PS) significantly moderated the relationship between OS and FSI at 1%, LALPB and FSI at 10%, and LCPB-FSI at a 5% significance level. PS negatively moderated the relationship between PWB-FSI at a 5% significance level.

Government effectiveness (GE) significantly moderated the relationship between OS-FSI at a 1% significance level, LALPB-FSI at 5%, and LCPB-FSI at a 5% significance level. Regulatory Quality (RQ) significantly moderated the relationship between OS-

FSI at a 1% significance level. RQ also moderated the relationship between LALPB-FSI at 5%, LNAB-FSI at 5%, and PWB-FSI at a 1% significance level. Rule of Law (RL) significantly moderated the positive relationship between OS-FSI, LALPB-FSI, and LCPB-FSI at a 1% significance level. RL negatively moderated the relationship between PWB-FSI at a 10% significance level. Control of Corruption (CC) significantly moderated the positive relationship between OS-FSI, LALPB-FSI, and LCPB-FSI at a 1% significance level.

Table 11 Summary of moderation Analysis (DV: FSI)

Interaction Terms	Coefficients	t-statistic
OS*VA	0.738***	3.63
LALPB*VA	0.226**	2.25
PWB*VA	-0.919**	-2.07
DER*VA	-0.008*	-1.73
LCPB*VA	0.255***	3.13
OS*PS	0.419**	2.41
LALPB*PS	0.174*	1.81
LQDT*PS	-0.056**	-2.56
LCPB*PS	0.167**	2.32
OS*GE	0.916***	2.83
LALPB*GE	0.381**	2.45
LCPB*GE	0.251**	1.98
OS*RQ	-3.765***	-3.35
LALPB*RQ	0.534**	2.04
LNAB*RQ	0.173**	1.99
PWB*RQ	4.537***	3.21
OS*RL	0.982***	3.32
LALPB*RL	0.398***	2.77
PWB*RL	1.087*	-1.73
LCPB*RL	0.370***	3.23
OS*CC	1.228***	2.99
LALPB*CC	0.581***	3.08
LCPB*CC	0.418***	2.63

Notes: ***, **, * denote significant at 1%, 5% and 10% respectively

Summary and Conclusion

The financial sustainability index has been developed by using principal component analysis (PCA). National governance indicators have been used as moderating variables. Due to the inclusion of lagged dependent variables as part of explanatory variables for persistency of the estimates, the model becomes dynamic. In addition, multicollinearity issues exist among the predictor variables (or independent variables), controlled variables, and moderating variables. Hence, the Generalized Method of Moment (GMM) is arguably the right regressor for estimating the dynamic panel data. In the second stage, GLS regression was used to examine the moderating effect. The substantive calculation shows that voice and accountability significantly moderate the relationships between FSI and OS, LALPB, PWB, DER, and LCPB in South Asia.

Political stability and the absence of violence moderate the relationships between FSI and OS, LALPB, LQDT, and LCPB in South Asia.

Government effectiveness moderates the associations between FSI and OS, LALPB, and LCPB in South Asia. Regulatory quality moderates the relationships between FSI and OS, LALPB, LNAB, and PWB in South Asia. The Rule of Law RL moderates the relationships between FSI and OS, LALPB, PWB, and LCPB in South Asia. Control of corruption CC moderates the relationships between FSI and OS, LALPB and LCPB in South Asia. Hence, it has been concluded that national governance indicators significantly moderate the relationship between financial sustainability and its determinants in the microfinance sectors of South Asia. Further robustness tests with alternative measures of the addition of additional variables in the model and its estimation affirmed the current study's findings.

The current study has several limitations and recommendations. Firstly, a theoretical framework for the study is developed from the institutional perspective and lacks the impact of external factors such as unemployment, interest rate, and growth on MFIs' sustainability. Future research may include external factors and other institutional variables to understand the proposed model better. Furthermore, future research may determine the impact of governance indicators on MFIs' sustainability in different contexts and perspectives with a longer period of data.

Practical Implications for Asian Business

This paper extends the literature on financial sustainability in MFIs by studying the relationship between various factors and sustainability and the moderating effect of the National Governance Indicators within the Asian context. The study has various implications regarding the contribution to the current microfinance sector. Theoretically, this study provides empirical support to the institutionalist approach with Profit Incentive Theory (PIT), suggesting that poverty can be reduced with the help of sustainable MFPs. Empirically, the results of the previous studies about financial performance were inconsistent and contradictory; hence this study examined the association in a different context with the moderating effect of NGIs. Methodologically, the study developed a new financial sustainability index for microfinance providers' financial sustainability (FSI).

Conventional (ROA & ROE) and efficiency (OSS & FSS) measures have been considered while developing the index. Firstly, to achieve a higher sustainability level, MFIs in Asia need to be financially independent, with less or no support from the government or donor agencies (Akter et al., 2021). Secondly, MFI's core focus is to increase outreach and reach the maximum number of poor people, and they tend to increase their loan size. Regulatory authorities must keenly observe the loan size as large loans may increase the success of small businesses due to increased resources for developing small businesses. Thirdly, policymakers in Asia must understand that the sustainability level of MFIs may best be achieved when they increase their focus on double-bottom line financial sustainability and outreach (Mekonnen & Zewudu, 2019).

The study developed a new financial sustainability index for measuring financial sustainability based on conventional ratios and efficiency ratios tailored to the

functioning of MFIs in Asia. Specifically, the index incorporates four elements representing conventional ratios, i.e., return on assets; return on equity; efficiency ratios, i.e., operational self-sufficiency and financial self-sufficiency. A number of exogenous variables are also found to affect the variables of interest. MFIs that accept deposits and donations are found to perform better financially than those that do not accept deposits (Churchill 2018). While this study has focused on financial performance as an outcome, most MFIs in Asia are not established with financial success as their main goal. Instead, social goals, such as poverty alleviation and female empowerment, are generally foremost.

It has been noted that most of the MFPs are focusing on the return rate; hence they have an excellent repayment rate. On the other hand, poverty has not been reduced, and women have not been empowered. Even so, on one hand, we have the examples of China and Malaysia, where they have brought a huge number of the population from the circle of poverty. The MFPs must focus on providing the training, i.e., entrepreneurial training, and arranging workshops for the borrowers to train them about entrepreneurship. MFPs must focus on LRB (local resource-based approach) to utilize the local based resources with the help of microfinancing. Hence, by providing microloans, entrepreneurial training, and workshops and focusing on utilizing local-based resources, poverty can be reduced, and women can be empowered better (Remer & Kattilakoski, 2021).

Strategically, it was suggested that MFPs may be better served by increasing the breadth of their staffing to include more professionals and technical people, and by ensuring that training helps better prepare all staff for functions that may not be in their overall general job descriptions. Evidence presented in this study suggests that this advice would significantly benefit microfinance providers. MFPs in Asia will need to be more strategic about their staffing and loan allocation to improve society and bring more people out of the circle of poverty.

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