



## **Defining Factors behind the Financial Sustainability of Microfinance Institutions (MFIs) of Bangladesh**

**Farhana Yasmin\*, Mst. Sharmin Sultana Sumi, Maliha Rabeta, Ummay Mahima Ima**

Department of Finance and Banking, Faculty of Business Studies, Bangladesh University of Professionals, Bangladesh.

\*Email: [farhana.yasmin@bup.edu.bd](mailto:farhana.yasmin@bup.edu.bd)

**Received:** 25 June 2024

**Accepted:** 02 October 2024

**DOI:** <https://doi.org/10.32479/ijefi.16966>

### **ABSTRACT**

Bangladesh can be proudly recognized as the pioneer of the microcredit concept. This paper aims to discover the potential firm-specific factors that influence the economic stability of MFIs (microfinance institutions) in Bangladesh. The study has collected quantitative data on one sustainability variable and six predictor variables through performance analysis of the top 120 MFIs of Bangladesh from 2022 to 2023. MFIs having 110% or more operational sustainability have been regarded as financially sustainable and examined based on managerial inefficiency, MFIs size, leverage, breadth of outreach, loan intensity, and deposit mobilization. The findings revealed that except deposit mobilization, all other stated predictors have imposed statistically significant effects on the financial sustainability of the microfinance institutions of Bangladesh of which size and loan intensity have a positive impact whereas managerial inefficiency, leverage, and breadth of outreach have a negative impact. The results of the research can be utilized to increase knowledge about the factors that can be eliminated or controlled to achieve financial sustainability and eventually, all the MFIs being operated in society, especially those who are facing challenges in accumulating their funds will benefit from this research by getting an idea of which determinants to control.

**Keywords:** Financial Sustainability, Operational Sustainability, Micro Finance, Micro Finance Institutions, Micro Credit

**JEL Classifications:** E51, G21, G32

### **1. INTRODUCTION**

The world recognized the word “microfinance” for the 1<sup>st</sup> time when Dr. Muhammad Yunus tried to launch a research project for a rare region of Bangladesh in the name of Grameen Bank in 1976. The key purpose of the research project was to investigate the feasibility of a credit delivery system designed to ensure modern banking services to the ones who could not avail themselves of the traditional banking avenues in rural areas (Basu et al., 2004). In the process, the directed credit approach prevailing during the 1980s was replaced by a completely new approach named the “financial systems approach.” According to this latest approach, it had been established that the poor should not be limited to getting financial services which just provided credit facilities for their agricultural development.

Rather, their access to economic growth shall be further focused and fostered with the help of widening the range of services that were financially to be provided (Armendariz and Morduch, 2010). This new approach created significant attention worldwide leading to the establishment of microfinance institutions (MFIs) all over the world that started applying the new potential (Robinson, 2001). According to this new approach, financial services have broadened definitions to include schemes for savings, the provision of loans, payment orders, facilities for insurance, and even transfers of remittances from abroad. This new concept also introduced non-financial services for the same target people that included group discussions, team building, monitoring, training, and guidance. The key implication of both levels of financial services was that the clients getting the MFI experience would be able to create wealth, improve life quality, and lead to women empowerment being the

foremost focal group. Finally, the benefits of microfinance altogether would lead to poverty reduction which is regarded as the foremost of the eight Millennium Development Goals (MDGs) of the nation.

Contextually, the concept of microfinance emerged as a powerful and very effective poverty alleviation mechanism. It has gained popularity because the target market of microfinance is mostly the underprivileged and low-income people of society who cannot afford access to the formal banking sector for formal credit and financial services. The fight against poverty being a pressing global concern, is essential for developing countries where the majority of the population resides in rural or urban regions (Meyer and Nagarjan, 2006). Developing countries like Bangladesh have human resources that have promising investment ideas but lack that financial support leading to vulnerabilities and financial constraints (Faridi, 2003). That is why there has been a growing need for microfinance in developing countries to provide such financial services or support to the poor communities of society. In Bangladesh starting its journey in the 1970s, microfinance has spent three decades serving poor households as the government has introduced and established microfinance as an economic development agent and poverty alleviation tool. After the growth phase that Bangladesh experienced being the pioneer of microfinance, there has been another growing concern about the continuation of the long-term subsidy program of the government.

This concern has thus moved the social objectives of microfinance to the financial and economic objectives of microfinance for developing countries like Bangladesh. Microfinance institutions cannot be operated on donations or subsidized funds from an over-burdened government like Bangladesh which creates a solid ground of problem for this research. Without any doubt, it is understandable that microfinance institutions can have a positive impact on the socioeconomic development of Bangladesh, but how long it can serve a society depends solely on its self-sufficiency. The self-sufficiency of microfinance institutions is measured by the financial sustainability of each MFI which states the ability to generate its income to cover overall operational costs and continue to serve the underprivileged section of society (Henock, 2019).

With a society of all financially sustainable MFIs that are working for poverty reduction from the society without putting pressure on the overburdened government, the overall economy of Bangladesh will benefit. Naturally, an MFI is said to have viability when its revenue exceeds the operational cost per unit of lent principal amount. Moreover, losses in MFI occur when lending rates fall even below the operational cost of that MFI (Tehulu, 2013). Hence it is evident that there are few critical aspects of financial sustainability of MFIs. The main objective of this research is therefore identifying such firm-specific factors that go within the context of the financial viability of microfinance institutions (MFIs) in economies like Bangladesh by judging its relationship with predictor variables as well as causal effects on stated variables.

## 2. LITERATURE REVIEW

Some major studies stated the necessity of MFIs to be sustainable themselves first to work for sustainable poverty alleviation as

financially unsustainable MFIs will be incapable of continuing their help towards the poor in the long run (Rhyne, 1998). The reason is that unsustainable MFIs will eventually cease to exist (Schreiner, 2000). Meyer (2002) defined operational sustainability as stands for the MFI's ability to cover its overall operational costs from its self-generated operating income without being dependent on any sort of subsidy. On the other hand, financial self-sufficiency refers to the MFI's ability to cover both their operating as well as financing costs and different forms of market-priced subsidy from their self-generated income. So, the above definitions given on financial sustainability, naturally and logically, state that an MFI will never be classified as a financially sustainable entity if it is carried with poor operational and financial performance or a loss-making MFI (Thapa, 2007). Dunford (2003) defined financial sustainability as MFIs' ability to keep going to achieve their broader objective without taking any continued grant or donor support. All these above definitions and conceptualizations agree on one point, which is, that financial sustainability is an MFI's capability to depend financially and wholly on self-operation. In 2004 a study extended the definition of microfinance as an offering to encompass a wide array of financial services. Apart from credit and savings, this study included deposits, payment services, insurance, and money transfer services to the rural poor or low-income households under the concept of microfinance (Kaoma Mwenda and Nkombo Muuka, 2004).

For alleviating the penury level of people with low-income brackets, microfinance can be considered a viable mechanism or alternative tool by ensuring their access to finance and modern financial services in an improved manner. Basu et al. (2004) stated in this context that microfinance institutions can complement formal banking services for the poor who cannot afford to get such financial services directly from the banking sector to fight their poverty. Adding to this characteristic of microfinance Davis in his study introduced the multifaceted dimensions of poverty and explained the rationale of how improving finance can help to reduce the vulnerability of unexpected events that poor people face (Davis et al., 2010). Microfinance is defined by Hartarska as a provision that provides a small range of financial offerings to people of low income or unbanked in nature (Hartarska, 2005). An MFI has been defined as logistically viable as well as economically resilient only when the operational sustainability (OSS) hits 110% by Bogan et al. (2007). To magnify microfinance as a concept another study suggested that microfinance institutions or MFIs should consider enhancing the long-run development of poor people by enabling average borrower groups to mark off from continual dependence on MFIs (Kamukama, 2013). Hence such a study inaugurated the concept of self-dependency by poor people rather than the forever dependency on MFIs itself (Ahlin and Jiang, 2008). Cooper and Ross (2011) employed a fixed effect two-stage least squares regression methodology to analyze a time series dataset of 82 microfinance institutions (MFIs) across Africa from 1997 to 2008 and suggested that performance is determined by the financial features of microfinance institutions (MFIs) rather than their structure.

With the increasing competition and pace of commerce, microfinance was again defined in the context of poor people

getting financial services like commercialized banks or other financial entities (Dokulilova et al., 2009). Musembi and Chun, (2020) suggested that to support the necessary innovation and expansion across various sectors policymakers should lower lending rates on credit to further financial inclusion for the underprivileged. Just as microfinance the term “financial sustainability” has its various interpretations by many scholars and experts. Initially, they have identified three to four levels of sustainability and lately, scholars have integrated to ascertain two major dimensions regarding sustainability, which are financial self-sufficiency (FSS) and operational self-sufficiency (OSS) (Iezza, 2010). The independent variable chosen as loan intensity has been represented by the proxy of gross loan portfolio estimated as a percentile fraction of total assets. In this study, the number of active borrowers is utilized as a metric to gauge the extent of the MFI’s outreach, while the gross loan portfolio signifies the magnitude of the MFI’s operations, which is crucial for achieving operational sustainability (Crombrughe et al., 2008; Hartarska and Nadolnyak, 2010; Nadiya et al., 2012). Lastly, Deposit Mobilization has been employed as the last predictor variable in the study which has been further proxied by the number of total deposits as a percentage of total assets (Anduanbessa, 2009; Rahman and Mazlan, 2014).

To identify financial sustainability factors and provide a more comprehensive and representative methodology for measuring them, Rai and Rai (2012) sought to create a microfinance financial performance index primarily study the microfinance institutions in India and Bangladesh that indicated operational expenses as the ratio for loan portfolio, ratio for capital to asset, and portfolio longing for than 30 days affect the sustainability. Building upon the characteristics discussed earlier, the initial independent variable selected is management inefficiency, which is measured by the ratio of Operating Expenses to Total assets (Tehulu and Abegaz, 2016). Iqbal et al. (2019) researched to infer whether the profitability and sustainability of MFIs are enhanced by implementing effective governance procedures through the elimination of operational inefficiency. It was identified that MFIs that are more profitable and sustainable tend to have stronger governance systems which are brought into action by efficient management. Further, a notable disparity was observed by Bhuyan and Islam (2020) in terms of social and economic well-being among various groups of impoverished individuals, mostly attributed to variations in borrowing levels.

The Breadth of outreach has been chosen as another predictor variable which has then been proxied by the quantity of currently engaged borrowers being served by an MFI (Ranjani and Kumar, 2018). The company size was also chosen as the second independent being represented by the logarithm value (natural) of total assets. This measure has been used in prior literature (Hussain et al., 2020; Iqbal et al., 2022, Parvin et al., 2020). As for the third predictor variable, the relative level of debt of the firm i.e. the total debt by total equity has been used (Parvin et al., 2020). Memon et al. (2021) examined the economic context of the financial feasibility of microfinance institutions (MFIs) to understand how macroeconomic policies impact the South Asian microfinance sector. The overall economic outcomes appeared crucial when

considering the good governance aspect of MFIs in their research. In addition, it was explored in the study that, to attain the financial stability of Microfinance Institutions (MFIs), the government and policymakers in microfinance need to carefully evaluate the leverage decisions (Berger and Patti, 2006).

Agboklou and Özkan (2023) investigated that the financial success of MFI is favorably and significantly impacted by its size. Nevertheless, a strong negative correlation has been found in relation to the financial performance with the loan loss ratio and the number of active depositors held per borrower. Ultimately, the size had a notable and favorable impact on financial sustainability, while a Portfolio at Risk >90 had a considerable and unfavorable impact. To study the factors that cause any MFIs to be financially sustainable in an emerging economy like Bangladesh, the study has assumed six explanatory variables i.e. Management inefficiency, MFI Size, Leverage, Breadth of Outreach, Loan Intensity, and Deposit Mobilization. Bangladesh is recognized as a pioneer in the realm of microfinance initiatives (Jackson and Islam, 2005; Pati, 2017). The formalized version of microfinance originated in the late 1970s after gaining independence from Pakistan, coinciding with the establishment of Grameen Bank (Jung, 2008). The microfinance program in Bangladesh achieved self-sustainability through the acquisition of government support, enabling it to adequately address its significant transaction costs (Khandker, 2005). Although the concept of microfinance is not new, very few studies have taken place where the financial sustainability of MFIs has been highlighted from the point of view of developing economies like Bangladesh. This leaves a hollow in the existing literature which needs to be further explored to enrich the prevalent knowledge of the resilience of MFIs financially. To explore the feasibility of the selected aspects from the context of Bangladesh and to ascertain the most important substances behind the financial sustainability of MFIs, six (06) hypotheses have been developed:

H<sub>1</sub>: There is a negative impact of Management inefficiency on the financial sustainability of MFIs

H<sub>2</sub>: There is a positive impact of the Size of the MFIs on the financial sustainability of MFIs

H<sub>3</sub>: Leverage has a negative impact on the financial sustainability of MFIs

H<sub>4</sub>: Breadth of outreach has a positive impact on the financial sustainability of MFIs

H<sub>5</sub>: Loan intensity has a positive impact on the financial sustainability of MFIs

H<sub>6</sub>: There is a negative impact of Deposit Mobilization on the financial sustainability of MFIs.

### 3. METHODS

#### 3.1. Research Design

As the research has sought to find out the factors behind the financial sustainability of MFIs in Bangladesh, the financial self-sufficiency of each MFI has been used as the dependent variable. Thus, such a dependent variable will be an outcome indicating the financial sustainability of an MFI. Bogan et al. (2007) in his research considered the financial sustainability of an MFI to be achieved when its operational sustainability reaches or exceeds 110%. Hence if an MFI has an operational sustainability >110%



then it has been regarded as a financially sustainable MFI and vice versa. The total whether or not a reflection of each MFI has been regarded as a dependent variable where,

$$\text{Operational sustainability} = \{ \text{Total Financial Revenue} / (\text{Financial expense} + \text{operating expense} + \text{Loan loss provision expense}) \}$$

Based on the theoretical relationship with the dependent variable, six predictors have been selected (Table 1).

The stated model has specified if an MFI is financially sustainable or unsustainable. Bogan (2009) has used a similar model in his research which can be depicted as:

$$Y^*_{it} = \beta_0 + \sum_{j=1}^6 \beta_j X_{jit} + \varepsilon$$

Extending the model by including all the explanatory variables, the baseline model can be developed as:

$$Y^*_{i,t} = \beta_0 + \beta_1 \text{OETA}_{i,t} + \beta_2 \text{LNTA}_{i,t} + \beta_3 \text{DE}_{i,t} + \beta_4 \text{LNNB}_{i,t} + \beta_5 \text{LTA}_{i,t} + \beta_6 \text{DTA}_{i,t} + \varepsilon$$

### 3.2. Data Collection

This study used cross-sectional data on the top 120 MFIs in Bangladesh for the years 2022-2023 to investigate the factors that practically influence the financial resilience of microfinance institutions in Bangladesh. The MFIs’ financial data has been collected from individual institutions as well and some has been collected from the reported database of the MRA (microfinance regulatory authority) of Bangladesh. The six explanatory predictors for 120 MFIs have been gathered from the performance analysis of each institution whereas the dependent variable is calculated for the top 120 MFIs of Bangladesh.

### 3.3. Analytical Tools

The study used an OLS regression to find out the determinants of the financial sustainability of MFIs in Bangladesh. Hossain and Khan (2016) previously utilized ordinary least squares (OLS) reduced-form equations to quantify the association between dependent and explanatory variables to assess the financial sustainability of MFIs. Preceding research employed a combination of the ordinary least squares (OLS) approach with a random effect model to ascertain the financial viability of MFIs (Ahlin et al., 2011; Lensink et al., 2018). Furthermore, the OLS model (Quayes, 2012), Logit model (Quayes, 2012), and Probit model (Bayai and Ikhide, 2018)

have been utilized in preceding analyses to examine financial sustainability thus far. This paper has adopted the OLS method and then Probit and Logistic regression of dependent variables and independent variables to locate the most influencing factors among six predictors of financial sustainability which can be backed up by the aforementioned preceding literature.

In this study, the data has been examined using SPSS. The analysis is planned to begin with descriptive statistics and correlation and ANOVA analysis to test the internal consistency. Then Probit and Logistic regression of dependent variables and independent variables has been done to locate the most influencing factors among the six predictors of financial sustainability.

## 4. RESULTS

### 4.1. Descriptive Statistics

Financial sustainability stands for the ability of Micro microfinance institutions to cover their total operating costs and costs of capital instead of depending on any kind of subsidy. As demonstrated in Table 2, the mean value of FSS is 0.9348 or 93.48% which is <1.10 or 110% signifying no financial sustainability. This variable has a moderate standard deviation (0.2061) which can be used to indicate the existence and limit of dispersion among the sustainability held by the microfinance institutions taken under this study. A total of 120 institutions have been included with their respective observations, out of which this study indicated 38 (31.67%) MFIs to be financially sustainable whereas the majority of it constituting 82 (68.33%) MFI observations come up as financially unsustainable. For the determination of the mean value for the breadth of outreach, the outcome for the LN function of the active number of borrowers is represented as 10.70. The standard of outreach is determined by the broadness of facilities to the unprivileged and poor. The breadth of LN of outreach was classified as high (>9.5 numbers of borrowers), medium (7-9 numbers of borrowers), and small (<7 numbers of borrowers) by the MIX benchmark technique. With a mean of 10.70 borrowers, microfinance organizations in Bangladesh have a wide outreach. The extent of outreach is indicated by the loan intensity.

A proxy measure of an MFI’s socioeconomic standing is the ratio of gross loans to total assets. Serving on an extremely high debt portfolio is indicated by the greatest loan intensity of 5.35. 7.62 is the mean capital structure (DE). This suggests that MFIs in Bangladesh primarily use debt financing schemes. The term “managing inefficiency” (OETA) refers to the extent to which managerial efficiency contributes to the decrease of staff

**Table 1: Summary of explanatory variables**

Explanatory variables	Proxy	Measurement
Management inefficiency	OETA	Operating expense/total assets
Size	LNTA	LN function of total assets
Leverage	DE	Total debt/total equity
Breadth of outreach	LNNB	LN function of active borrower numbers
Loan intensity	LTA	Gross Loan Portfolio as a percentage of total assets
Deposit mobilization	DTA	Amount of total deposit as a percentage of total assets

OETA: Operating expense/asset ratio

**Table 2: SPSS output for descriptive statistics**

	Mean	Std. Deviation	n
OSS	0.9348	0.20615	120
OETA	0.1560	0.10120	120
LNTA	20.0267	1.70096	120
LNNB	10.7047	1.11608	120
LTA	0.9353	0.57620	120
DTA	0.3089	0.17886	120
DE	7.6191	6.63188	120

OSS: Operational self-sufficiency, OETA: Operating expense/asset ratio

or personnel-related expenses as well as operating expenses. Numerous methods can be used to determine the efficiency of MFI; in this study, the operating expense to total assets ratio, or OETA, is examined as an efficiency indicator. In this study, OETA has a maximum value of 0.9726 and a mean value of 0.1560. Outreach and efficiency are combined to create mobilization, which is commonly expressed as the total deposits as a percentage of the total assets held by MFIs. However, the common notation signifies that serving it is more expensive and labor-intensive when a borrower or loan client is being served compared to allocating a depositor. If all factors are held constant, a greater ratio of deposit mobilization would suggest that MFIs are more efficient, as they are able to handle a larger number of borrowers and clients in comparison. Based on the data, it is evident that the average deposit mobilization for Bangladeshi MFIs is 0.3089. The size of the MFIs can be a good indicator to suggest its client and borrower nurturing capability and thus in this case, the LN function of total assets of MFIs is regarded as the indicator for their size and the mean value for this is 20.02, and maximum and minimum value of 25.10 and 7.82 respectively.

### 4.2. OLS Regression

Based on the analysis in Table 3, it is evident that there is a negative relationship between the operating expense/asset ratio (OETA) and the financial sustainability of microfinance institutions (MFIs) in Bangladesh. This suggests that as the OETA increases, the financial sustainability of the MFIs tends to decrease. The statistical significance of the result at the 1% level suggests that changes in these variables mark a notable impact on the financial stability of the MFIs. Specifically, a decrease (or increase) in these variables is associated with an increase (or reduction) in financial sustainability. This result is also consistent with the work of Pasiouras and Kosmidou (2007), and Kosmidou (2008) which have also signified that inefficient managerial activities lead to poor expenses made by the management and thus it carries on being among the prominent factors that have led to the lackluster profitability of financial institutions. The co-efficient for debt/equity ratio (D/E ratio) comes up as negative and with the value  $P > Z = 0.003$ , statistically significant this relationship may indicate that MFIs in Bangladesh do not distribute dividends frequently or regularly.

Nevertheless, this makes equity a cost-effective option for financing when the comparison is to be established against debt financing. There has also been consistency observed for this finding with empirical evidence from the studies of (Rajan and

Zingales, 1995; Wald, 1999; Booth et al., 2001; and Fama and French, 2002). All of this research has confirmed the possible negative relationship between debt level led by debt/equity ratio and a firm's performance in terms of profitability. The co-efficient for LTA or loan to asset ratio (LTA) exhibits a substantially positive outcome at 1% significance level which in turn poses the fact that MFIs' economic stability gets greatly impacted by the intensity of the loan, as indicated by the gross loan portfolio to the total asset ratio. It is well-known that in the process of microfinance schemes, the overall loan portfolios are the ultimate key origin of revenue to MFIs, and therefore, assuming all else remains the same, an increase in the loan portfolio will result in higher interest income and profits for MFIs. On the other hand, if a microfinance institution experiences a rise in risk due to an increase in its loan-to-asset ratio, it could potentially lead to a reversal in profits. However, this finding conflicts with the results of preceding research done by Okumu (2007) which alternatively documented LTA or loan-to-asset ratio negatively influencing MFIs' financial sustainability.

Furthermore, the coefficient indicates a favorable correlation between the extent of outreach, as represented by LNNB in the model, and the overall financial sustainability of MFIs. This sensitivity is not backed by statistical significance whose P-value is higher than 0.05. The deposit/asset ratio standing for deposit mobilization shows a negative relationship to the financial sustainability of MFIs as expected. Nevertheless, this result lacks statistical significance since the P-value for the variable exceeds 10%. Finally, the size of the MFIs is found to have a significantly positive relationship with financial sustainability. The relationship goes with the expectations as the size of the MFIs can bring economies of scale as an additional impact to increase the revenue. Hence, it has been universally stated that if a financial model can predict more than 50% of its selected dependent variable with statistical significance then the model will be considered as a suitable one. Analyzing the stated output of this financial model it is evident that 5 independent variables out of 6 independent variables have come up with logical and statistically significant outcomes signifying the fact that the model is predicting almost 83.33% of significant relationship between dependent variables (Financial Sustainability) and independent variables which is very acceptable.

### 4.3. Correlation among Variables

Table 4 summarizes summarizes the Pearson Correlation test for the financial model of this analysis. As the Pearson correlation test has been done with the hypothesis that the variables are associated

**Table 3: Coefficients<sup>a</sup>**

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Correlations			Collinearity statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1										
(Constant)	0.304	0.197		1.541	0.126					
OETA	-1.913	0.564	-0.939	-3.391	0.001	0.038	-0.304	-0.264	0.079	12.671
LNTA	0.054	0.014	0.445	3.776	0.000	0.214	0.335	0.294	0.435	2.298
LNNB	-0.039	0.021	-0.212	-1.831	0.070	0.057	-0.170	-0.143	0.451	2.215
LTA	0.382	0.098	1.068	3.898	0.000	0.172	0.344	0.303	0.081	12.402
DTA	-0.084	0.098	-0.073	-0.853	0.395	-0.025	-0.080	-0.066	0.829	1.206
DE	-0.008	0.003	-0.268	-3.043	0.003	-0.307	-0.275	-0.237	0.779	1.284

<sup>a</sup>Dependent variable: OSS. OSS: Operational self-sufficiency, OETA: Operating expense/asset ratio

**Table 4: Correlation between variables**

	OSS	OETA	LNTA	LNNB	LTA	DTA	DE
Pearson correlation							
OSS	1.000	0.038	0.214	0.057	0.172	-0.025	-0.307
OETA	0.038	1.000	-0.095	-0.082	0.950	0.304	-0.036
LNTA	0.214	-0.095	1.000	0.727	-0.108	0.072	0.173
LNNB	0.057	-0.082	0.727	1.000	-0.111	0.046	0.040
LTA	0.172	0.950	-0.108	-0.111	1.000	0.250	-0.143
DTA	-0.025	0.304	0.072	0.046	0.250	1.000	-0.162
DE	-0.307	-0.036	0.173	0.040	-0.143	-0.162	1.000
Sig. (1-tailed)							
OSS	0.0	0.341	0.010	0.270	0.030	0.391	0.000
OETA	0.341	0.0	0.151	0.186	0.000	0.000	0.348
LNTA	0.010	0.151	0.0	0.000	0.120	0.216	0.030
LNNB	0.270	0.186	0.000	0.0	0.114	0.309	0.333
LTA	0.030	0.000	0.120	0.114	0.0	0.003	0.059
DTA	0.391	0.000	0.216	0.309	0.003	0.0	0.038
DE	0.000	0.348	0.030	0.333	0.059	0.038	0.0
n							
OSS	120	120	120	120	120	120	120
OETA	120	120	120	120	120	120	120
LNTA	120	120	120	120	120	120	120
LNNB	120	120	120	120	120	120	120
LTA	120	120	120	120	120	120	120
DTA	120	120	120	120	120	120	120
DE	120	120	120	120	120	120	120

OSS: Operational self-sufficiency, OETA: Operating expense/asset ratio

**Table 5: Fitness test model summary<sup>b</sup>**

Model	R	R square	Adjusted R square	Std. Error of the estimate	Change statistics				Durbin-Watson	
					R square change	F change	df1	df2		Sig. F change
1	0.562a	0.316	0.279	0.17500	0.316	8.690	6	113	0.000	1.699

<sup>a</sup>Predictors: (Constant), DE, Operating expense/asset ratio, LNNB, DTA, LNTA, LTA. <sup>b</sup>Dependent variable: Operational self-sufficiency

with each other, the output shows some positively related variables as well as negatively related variables, all within the acceptance range of +1 to -1.

#### 4.4. Model Fitness Test

Table 5 signifies the R Square which is a multiple coefficient determination for the variables and shows R square as 0.316 meaning almost 31.6% of the variables included can be explained by the model. Casting light on universal criteria, a model is considered good if it is able to explain 20% or 0.20 of the variables that are included; in this instance, the model can also be deemed adequate from this point of view. Besides, The Durbin-Watson statistic is done as a statistical approach towards autocorrelation and always between 0 and 4. Universally, if the test results value of 2 then it means that there is no such autocorrelation in the selected sample of the analysis. Any value that approaches 0 indicates a positive autocorrelation and a value towards 4 indicates a negative autocorrelation among variables. The following analysis shows the value of the Durbin Watson test is 1.70 for the variables which is close to the value of 2 and thus it can signify almost no subsistence of autocorrelation among the independent variables. This is important to ensure the quality of the data set used for the analysis and in the process confirm the authenticity of the outputs.

#### 4.5. ANOVA Test

Table 6 demonstrates the value of the test for the research data is F (120) = 8.690 and the P-value is lower than 0.001 (P < 0.001)

**Table 6: ANOVA<sup>b</sup> test result**

Model	Sum of squares	df	Mean square	F	Sig.
1					
Regression	1.597	6	0.266	8.690	0.000 <sup>a</sup>
Residual	3.461	113	0.031		
Total	5.057	119			

<sup>a</sup>Predictors: (Constant), DE, Operating expense/asset ratio, LNNB, DTA, LNTA, LTA.

<sup>b</sup>Dependent variable: Operational self-sufficiency, ANOVA: Analysis of variance

showing the statistical significance of the test. Thus, it can be interpreted that the variances of the dependent and independent variables used for financial sustainability of MFIs are not equal and the inclusion of the independent variables has certainly improved the predictability of financial sustainability in the model.

#### 4.6. Collinearity Statistics

Table 7 shows the collinearity statistics where the absence of any multi-collinearity problem can be supported by qualifying the rule of thumb that any variable that has a tolerance level <0.01 has the collinearity effect. But in this case, all the variables have tolerance levels significantly different from the 0.01 level, thus ignoring the multicollinearity problem between the independent variables.

#### 4.7. Logistic Regression

A logistic regression model suits most of the continuous variables where all independent variables can be proxied by binary values

**Table 7: Coefficients<sup>a</sup>**

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.	Correlations			Collinearity statistics	
	B	Std. error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1										
(Constant)	0.304	0.197		1.541	0.126					
OETA	-1.913	0.564	-0.939	-3.391	0.001	0.038	-0.304	-0.264	0.079	12.671
LNTA	0.054	0.014	0.445	3.776	0.000	0.214	0.335	0.294	0.435	2.298
LNNB	-0.039	0.021	-0.212	-1.831	0.070	0.057	-0.170	-0.143	0.451	2.215
LTA	0.382	0.098	1.068	3.898	0.000	0.172	0.344	0.303	0.081	12.402
DTA	-0.084	0.098	-0.073	-0.853	0.395	-0.025	-0.080	-0.066	0.829	1.206
DE	-0.008	0.003	-0.268	-3.043	0.003	-0.307	-0.275	-0.237	0.779	1.284

OSS: Operational self-sufficiency, OETA: Operating expense/asset ratio

of only 0 or 1. Here the binary value of financial sustainability has been taken based on operational sustainability. That means MFIs having more than 110% of OSS have been regarded as financially sustainable and marked as 1 and those who are not sustainable as 0. Then the binary logistic regression in SPSS gives the following values.

This output in Table 8 simply shows the dependent variable that the financial sustainability of MFIs has been encoded only with two values, 0 and 1. If financially sustainable the model takes 1 and if not, the model has taken 0.

**4.7.1. Block 0: Beginning block**

Here in Table 9, the output containing Block 0 represents a model that particularly includes the value of the intercept. In the process, two decision options have been chosen where the first option signifies that (82/120) = 68.33% of the observations decided to pause the research whereas the second option counts for the 31.67% deciding to allow it to proceed given the base rate. No other information is available on this. Hence, the case suggests and initiates prediction for every case that requires the subject to terminate the research as the best strategy. Using that strategy, 68.33% of the time, the chosen variables will be right.

The following table 10 show that the value of the intercept-only model is  $\ln(\text{odds}) = -0.769$  under the variables which is why all the predictors have been shown in Table 11 not being included in the equation. When this expression has been exponentiated on both sides, the value for the predicted odds appears as  $[\text{Exp}(B)] = 0.463$ . This value of the observed odds being 0.463 comes up from the mathematical expression  $56/120 = 0.463$  since 64 of the subjects preferred to continue the research and the rest 56 responded to stop the research.

**4.7.2. Block 1: Method = Enter**

**4.7.2.1. Omnibus tests of model coefficients**

This output in Table 12 now shows what the Block 1 output looks like. A Chi-Square of 40.560 on 1 df is obtained from Omnibus Tests of Model Coefficients, in Table 13, which is significantly above 0.001. This test is intended to verify the null hypothesis, which states that the capacity to forecast the decisions made by the subject variables has not increased noticeably after the financially sustainable factors were included in the model.

**Table 8: Dependent variable encoding**

Original value	Internal value
0.00	0
1.00	1

**Table 9: Classification table<sup>a,b</sup>**

	Observed	Predicted		
		FSS		Percentage correct
		0.00	1.00	
Step 0	FSS			
	0.00	82	0	100.0
	1.00	38	0	0.0
	Overall percentage			68.3

<sup>a</sup>Constant is included in the model. <sup>b</sup>The cut value is 0.500

**Table 10: Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp (B)
Step 0						
Constant	-0.769	0.196	15.361	1	0.000	0.463

**Table 11: Variables not in the Equation**

	Score	df	Sig.
Step 0			
Variables			
OETA	0.142	1	0.706
LNTA	0.104	1	0.747
LNNB	0.513	1	0.474
LTA	2.814	1	0.093
DTA	0.105	1	0.746
DE	8.975	1	0.003
Overall statistics	22.983	6	0.001

OETA: Operating expense/asset ratio

**4.7.2.2. Hosmer and lemeshow test**

The Hosmer-Lemeshow (HL) test is Table 14 widely used for logistic regression to answer the question of model fitness towards the data used. Like any other statistical test, the Hosmer-Lemeshow also tests alternative hypotheses by predicting that stated model perfectly fit with group data observations against each of the null hypotheses. In the analysis, cases are automatically arranged based on their probability of correct prediction on the criterion-selected variable. Then the ordered cases are categorized concerning the potential predictability of the target event into ten equal-sized groups (Table 15). The predicted value for the group is then obtained in regard to each ten groups, particularly against the actual group data.



**Table 12: Iteration history<sup>a,b,c,d</sup>**

Iteration	-2 Log likelihood	Coefficients						
		Constant	OETA	LNTA	LNNB	LTA	DTA	DE
Step 1								
1	125.715	-2.209	-17.152	0.228	-0.292	3.261	0.243	-0.053
2	115.779	-7.462	-19.155	0.839	-0.925	3.844	0.180	-0.151
3	110.081	-16.927	-16.433	1.936	-2.072	3.728	0.226	-0.276
4	109.297	-21.138	-15.447	2.439	-2.605	3.717	0.201	-0.350
5	109.279	-21.799	-15.314	2.521	-2.693	3.719	0.182	-0.363
6	109.279	-21.814	-15.311	2.523	-2.695	3.719	0.181	-0.364
7	109.279	-21.814	-15.311	2.523	-2.695	3.719	0.181	-0.364

<sup>a</sup>Method: Enter. <sup>b</sup>Constant is included in the model. <sup>c</sup>Initial-2 Log Likelihood: 149.840. <sup>d</sup>Estimation terminated at iteration number 7 because parameter estimates changed by <0.001

**Table 13: Omnibus tests of model coefficients**

	Chi-square	df	Sig.
Step 1			
Step	40.560	6	0.000
Block	40.560	6	0.000
Model	40.560	6	0.000

**Table 14: Hosmer and lemeshow test**

Step	Chi-square	df	Sig.
1	5.573	8	0.695

**Table 15: Contingency table for hosmer and lemeshow test**

	FSS=0.00		FSS=1.00		Total
	Observed	Expected	Observed	Expected	
Step 1					
1	12	11.968	0	0.032	12
2	12	11.592	0	0.408	12
3	12	10.883	0	1.117	12
4	10	10.204	2	1.796	12
5	9	9.197	3	2.803	12
6	8	8.445	4	3.555	12
7	6	7.174	6	4.826	12
8	4	5.587	8	6.413	12
9	7	4.453	5	7.547	12
10	2	2.497	10	9.503	12

This output for this arrangement of the group data is a contingency table constructed on 2 × 10 measures. It is followed by the chi-square statistic test which is calculated by a solid comparison of the experiential frequencies of each variable against expected ones by putting it under a linear model. A Chi-square which is not statistically significant indicates that the used dataset fits the assumed model well. Here the Chi-square of 0.695 is much more significant than the cut value of 0.05, thus the Chi-square is significantly insignificant which implies that the model satisfactorily has fitted the data.

Finally, the last output to be highlighted in Table 16 shows after including block 1, how it has improved the predictability of the variables by the model. It has been seen here that 75% of the variables will be correctly predicted by the chosen model which is satisfactory enough to evaluate a model as a good model.

## 5. DISCUSSION

The findings of the study suggest that the resilience of Microfinance Institutions financially or their long-term sustainability, denoted

**Table 16: Classification table<sup>a</sup>**

	Observed	Predicted		
		FSS		Percentage correct
		0.00	1.00	
Step 1	FSS			
	0.00	69	13	84.1
	1.00	17	21	55.3
	Overall percentage			75.0

<sup>a</sup>The cut value is 0.500

by the capacity of finance Institutions to fully fund their total operating costs and costs of capital from their revenue rather than relying on any kind of assistance or grants Bogan et al. (2007), affected by several factors namely, management inefficiency, size of the company, leverage, breadth of outreach, and loan intensity (Bogan, 2012). Among the variables, Management efficiency, company size, loan intensity, and leverage levels exhibit a 99% statistically significant relationship whereas the breadth of the outreach affects the sustainability of MFIs at a 90% confidence level. Moreover, MFI’s sustainability has a positive relationship with both loan intensity and the size of the company. As the size of the company increases, scalability helps the institutions improve their efficiency through economies of scale and positively contributes to sustainability. The relationship found matches with the theoretical expectations and empirical results as shown in the study of Agboklou and Özkan (2023).

As the proportion of loans increases in the total asset portfolio, revenue from the total asset portfolio increases as it is the most revenue and profit-generating asset class of MFIs, which logically helps to cover the expenses and improves the cost coverage ability of the institutions from its own source. This result also aligns with expectations that effective outcome comes only from long term participation in micro lending in Bangladeshi firms (Islam, 2011). On the other hand, Management inefficiency, breadth of outreach, and leverage have positive relationships with sustainability. Inefficient management increases the cost of the company and makes it difficult for the institution to sustain itself successfully over the long term. Along with the expectation, this finding also reflects the relationship stated in the research of Iqbal et al. (2019) and Tehulu and Abegaz (2016). Although outreach enhances the scalability of the institution, the findings of this study show a negative relationship with financial sustainability. This is a contradiction with the theoretical expectation. However, a possible explanation of the negative relationship between the breadth of outreach and sustainability could be operational inefficiency



and incremental cost. Also that, microcredit benefits layers of borrowers heterogeneously, certainly not in similar magnitude (Islam, 2015). Outreach increases the reach to customers but the associated costs of expanding geographically sometimes outweigh the benefits and decentralized large institutions often create operational inefficiency. Leverage increases the fixed cost of any organization and increases the financial sustainability risk. This contradicts the findings from MFIs in Africa where MFIs with higher D/E ratios outperformed the lower ones (Cooper and Ross, 2011). Overall, the study results are arranged in line with the actual scenario of microfinance institutions in Bangladesh. In terms of number, size, and innovation, the progression has been achieved as far ahead in the microfinance industry, but a long way is yet to go if the financial as well as operational stability of the microfinance institutions has to be ensured. Ensuring good governance, integration of technology in operations, and careful risk management of the institutions are the rudimentary steps of the path.

## 6. CONCLUSION

This paper aims to discuss the issues of MFIs' financial sustainability in the context of its determinants all of which are essentially chosen firm-specific factors having the ability to justify any microfinance institution's stability picture in the realism performance. The purpose of this research therefore has been achieved by turning the attention of finance researchers to the important issues in microfinance, which can be taken forward by many such tools, economic models, and financial frameworks to put up with the poverty problem of the world and have the latent to considerably shift both the academic theory and following practice of different microfinance operations headlong. The practical approach of this paper offers the microfinance discipline a possible avenue to take a significant look at their monitoring and controlling system to better achieve the sustainability goals at each aspect and therefore bring a difference in the lives of millions of poor people and being a pioneer of this field. Practically, this paper aims to implement better direction for microfinance institutions of Bangladesh to have a more structured controlling system along with serving as a sustainability benchmark which will ensure the better functioning of MFIs of Bangladesh. The study has been limited by the number of MFIs taken for the study and also the scope of selected predictors. Future research can open avenues to incorporate all of the MFIs currently operating in Bangladesh as well as incorporate external environmental factors to better place an MFI into the picture of realism.

## REFERENCES

- Agboklou, K.E., Özkan, B. (2023), Determinants of the financial performance and sustainability of microfinance institutions in Togo. *Sosyal Ekonomik Araştırmalar Dergisi*, 23(1), 1-11.
- Ahlin, C., Jiang, N. (2008), Can micro-credit bring development? *Journal of Development Economics*, 86(1), 1-21.
- Ahlin, C., Lin, J., Maio, M. (2011), Where does microfinance flourish? Microfinance institution performance in macroeconomic context. *Journal of Development Economics*, 95(2), 105-120.
- Anduanbessa, T. (2009), Statistical analysis of the performance of microfinance institutions: The Ethiopian case. *Savings and Development*, 33(2), 183-198.
- Armendariz, B., Morduch, J. (2010), *The Economics of Microfinance*. United States: MIT Press.
- Basu, A., Blavy, R., Yulek, M. (2004), *Microfinance in Africa: Experience and Lessons from Selected African Countries*. Working Paper, International Monetary Fund.
- Bayai, I., Ikhide, S. (2018), Financing structure and financial sustainability of selected SADC microfinance institutions (MFIs). *Annals of Public and Cooperative Economics*, 89(4), 665-696.
- Berger, A., Bonaccorsi di Patti, E. (2006), Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance*, 30(4), 1065-1102.
- Bhuyan, M.H.R., Islam, M.S. (2020), The effectiveness of the government rural social services microcredit programme in Bangladesh. *The International Journal of Community and Social Development*, 2(1), 51-70.
- Bogan V, Johnson W, Mhlanga N. (2007), *Microfinance Institutions: Does Capital Structure Matter?*. Available from: <https://ssrn.com/abstract=1144762>.
- Bogan, V. (2012), Capital structure and sustainability: An empirical study of microfinance institutions. *Review of Economics and Statistics*, 94(4), 1045-1058.
- Booth, L., Aivazian, V., Demircuc-Kunt, A., Maksimovic, V. (2001), Capital structures in developing countries. *The Journal of Finance*, 56(1), 87-130.
- Cooper, E.W., Ross, N.E. (2011), Bridging the information gap between borrowers and microfinance lenders. *Global Business and Finance Review*, 16(1), 1-15.
- Crombrugge, A., Tenikue, M., Sureda, J. (2008), Performance analysis for a sample of microfinance institutions in India. *Annals of Public and Cooperative Economics*, 79(2), 269-299.
- Davis, K., Maxwell, L., Horton, J. (2010), Banking for better lives: The impact of micro-finance on women and their households. *Journal of Business Administration Online*, 9(2).
- Dokulilova, L., Janda, K., Zetek, P. (2009), Sustainability of microfinance institutions in financial crisis. *European Financial and Accounting Journal*, 4(2), 7-33.
- Dunford, C. (2003), *The Holy Grail of Microfinance: Helping the Poor and Sustainable: Microfinance Evolution Achievements and Challenges*. London: ITDG.
- Fama, E.F., French, K.R. (2002), Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies*, 15, 1-33.
- Farid H. *Micro Credit Programs in Bangladesh: Assessing Performance of Participating Women*. USA: Department of Economics in the Wake Forest University; 2003.
- Hartarska, V. (2005), Governance and performance of microfinance institutions in Central and Eastern Europe and the newly independent states. *World Development*, 33(10), 1627-1643.
- Hartarska, V., Nadolnyak, D. (2010), Do regulated microfinance institutions achieve better sustainability and outreach? Cross-country evidence. *Applied Economics*, 39(10), 1207-1222.
- Henock, M.S. (2019), Financial sustainability and outreach performance of saving and credit cooperatives: The case of Eastern Ethiopia. *Asia Pacific Management Review*, 24(1), 1-9.
- Hossain, M.S., Khan, M.A. (2016), Financial sustainability of microfinance institutions (MFIs) of Bangladesh. *Developing Country Studies*, 6(6), 69-78.
- Hussain S., Quddus A., Pham P.T., Rafiq, M., Pavelková, D. (2020), The moderating role of firm size and interest rate in capital structure of the firms: Selected sample from sugar sector of Pakistan. *Invest Manag Financial Innov*, 17(4), 341-355.
- Iezza, P. (2010), Financial sustainability of microfinance institutions:

- An empirical analysis. IMF.org, (2014), Bangladesh and the IMF. United States: IMF.
- Iqbal A, Sharofiddin A, Farooq Z, Khan SA. Corporate governance and earnings management practices: Moderating role of audit committees. *J Positive School Psychol* 2022;6:57-72.
- Iqbal, S., Nawaz, A., Ehsan, S. (2019), Financial performance and corporate governance in microfinance: Evidence from Asia. *Journal of Asian Economics*, 60, 1-13.
- Islam, A. (2011), Medium and long-term participation in microcredit: An evaluation using a new panel dataset from Bangladesh. *American Journal of Agricultural Economics*, 93(3), 843-862.
- Islam, A. (2015), Heterogeneous effects of microcredit: Evidence from large-scale programs in Bangladesh. *Journal of Asian Economics*, 37, 48-58.
- Jackson, K.E., Islam, T. (2005), Regulation of microfinance NGOs: General reflections and the case of Bangladesh. *International Journal of Rural Management*, 1(1), 45-57.
- Jassim J, Khawar M, Prasad A. Microfinance in South Asia: Genesis, Challenges and the Road Ahead. Pakistan: Pakistan Microfinance Network 2018.
- Jung, D.H. (2008), Microfinance in India: SHG-bank linkage program. *International Area Review*, 11 (2), 127-152.
- Kamukama, N. (2013), Intellectual capital: Firms' hidden source of service quality in the microfinance industry in Uganda. *Journal of African Business*, 14(3), 150-161.
- Kaoma Mwenda, K., Nkombo Muuka, G. (2004), Towards best practices for microfinance institutional engagement in African rural areas: Selected cases and agenda for action. *International Journal of Social Economics*, 31(1/2), 143-158.
- Khandker, S.R. (2005), *Microfinance and Poverty: Evidence using Panel Data from Bangladesh*. United Kingdom: Oxford University Press, 19(2), 263-286.
- Kosmidou, K. (2008), The determinants of banks' profits in Greece during the period of EU financial integration. *Managerial Finance*, 34(3), 146-159.
- Lensink, R., Mersland, R., Vu, N.T.H., Zamore, S. (2018), Do microfinance institutions benefit from integrating financial and nonfinancial services? *Applied Economics*, 50(21), 2386-2401.
- Memon, A., Akram, W., Abbas, G., Chandio, A.A., Adeel, S., Yasmin, I. (2021), Financial sustainability of microfinance institutions and macroeconomic factors: A case of South Asia. *South Asian Journal of Macroeconomics and Public Finance*, 11(1), 116-142.
- Meyer, R., Nagarajan, G. (2006), Microfinance in developing countries: Accomplishments, debates, and future directions. *Agricultural Finance Review*, 66(2), 167-193.
- Meyer, R.L. (2002), The demand for flexible microfinance products: Lessons from Bangladesh. *Journal of International Development*, 14(3), 351-368.
- Musembi, G.R., Chun, S. (2020), Long-run relationships among financial development, financial inclusion, and economic growth: Empirical evidence from Kenya. *Global Business Finance Review*, 25(4), 1-11.
- Nadiya, M., Polanco, F., Ramanan, T. (2012), Dangers in mismanaging the factors affecting the operational self-sustainability (OSS) of Indian microfinance institutions (MFIs)-an exploration into Indian microfinance crisis. *Asian Economic and Financial Review*, 2(3), 448-462.
- Nawaz A. Issues in the Sustainability of Microfinance: Three Empirical Essays at Micro and Macro Level (Doctoral dissertation, Göttingen, University, dissertation); 2009.
- Okumu, L.J., (2007), *The Microfinance Industry in Uganda: Sustainability, Outreach AND regulation*. Stellenbosch: University of Stellenbosch. [Doctoral Dissertation].
- Parvin, R., Rana, M.S., Shams, S. (2020), Literature review on the association between earnings management and corporate social responsibility. *International Journal of Accounting and Finance Review*, 5(1), 22-31.
- Pasiouras, F., Kosmidou, K. (2007), Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, 21(2), 222-237.
- Pati, A. P. (2017), Contribution of microfinance in achieving Millennium Development Goals: Evidences from global pool data. *International Journal of Rural Management*, 13(2), 182-198.
- Quayes, S. (2012), Depth of outreach and financial sustainability of microfinance institutions. *Applied Economics*, 44(26), 3421-3433.
- Rahman, M.A., Mazlan, A.R. (2014), Determinants of financial sustainability of microfinance institutions in Bangladesh. *International Journal of Economics and Finance*, 6(9), 107-116.
- Rai, A.K., Rai, S. (2012), Factors affecting financial sustainability of microfinance institutions. *Journal of Economics and Sustainable Development*, 3(6), 1-9.
- Rajan, R.G., Zingales, L., (1995), What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), 1421-1460.
- Ranjani, K. S., Kumar, S. (2018), An investigation of mission drift in Indian MFI. *International Journal of Social Economics*, 45(9), 1305-1317.
- Rhyne, E. (1998), The yin and yang of microfinance: Reaching the poor and sustainability. *Micro Banking Bulletin*, 2(1), 6-8.
- Robinson, M. (2001), *The Microfinance Revolution: Sustainable Finance for the Poor*. Chicago: World Bank Publications.
- Schreiner, M. (2000), Credit scoring for microfinance: Can it work? *Journal of Microfinance/ESR Review*, 2(2), 6.
- Tehulu, T. (2013), Determinants of financial sustainability of microfinance institutions in East Africa. *European Journal of Business and Management*, 5(17), 152-158.
- Tehulu, T.A. (2013), Determinants of financial sustainability of microfinance institutions in East Africa. *European Journal of Business and Management*, 5(17), 152-158.
- Tehulu, T.A., Abegaz, T.M. (2016), Determinant factors in credit risk management of microfinance institutions in Ethiopia. *Journal of Policy and Development Studies*, 10(3), 118-129.
- Thapa, G. (2007), Sustainability and governance of microfinance institutions: Recent experiences and some lessons for Southeast Asia. *Asian Journal of Agriculture and Development*, 4(1), 17-37.
- Wald, J.K., (1999), How firm characteristics affect capital structure: An international comparison. *Journal of Financial Research*, 22(2), 161-187.