Impact of Social Performance of Islamic Microfinance Institutions on their Operational and Financial Self-Sufficiency

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Abstract

Microfinance organizations must prioritize both social and financial performance. Therefore, it is critical to determine how they affect one another. The purpose of this research is to examine the impact of social performance (SP) of global Islamic Microfinance Institutions (IMFIs) on their operational and financial self-sufficiency. Further, the study also checks the moderating role of institution size in this relationship. This research is based on unbalanced micro panel data. The Random Effect model is applied using Hausman test for the period 2015-2021 with 50 IMFIs sample. SP was measured through Number of Active Borrowers (NABO), Percentage of Female Borrowers (PFEB), and Gross Loan Portfolio (GLPF) as independent variables while Operational Self-sufficiency (OSS) and Financial Self-sufficiency (FSS) were the dependent variables. Other variables, Gross Domestic Product per Capita (GDPC), Consumer Price Index (CPIN) and Regulatory Quality (REQ) were used as control variables while Institution Size (IZ) was used as moderator. Results indicated that GLPF and PFEB have positive relationship with OSS while NABO has negative relationship with OSS. IZ has a negative relationship with OSS and it positively strengthens the relationship of PFEB and GLPF with OSS and negatively strengthens the relationship between NABO and OSS. GLPF has a positive relationship with FSS while NABO and PFEB have negative relationship with FSS. IZ has a positive relationship with FSS and it negatively strengthens the relationship between PFEB and GLPF and positively strengthens the relationship between NABO and OSS.

Keywords: Financial Self-Sufficiency, Islamic Microfinance, Operational Self-Sufficiency, Social Performance

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1. Introduction

Microfinance (MF) is a set of practices to serve unbanked poor population to alleviate poverty (Armendáriz & Labie, 2011). Microfinance is providing products and services to the "bottom of the pyramid" population (Vassallo et al., 2019). Microfinance encourages economic growth of the population that cannot access to traditional conventional finance by providing loans at small level. Microfinance institutions (MFIs) include all financial intermediates which provide credit, saving, transfer, insurance, consultation, venture capital to low income individuals, and groups based on rural or urban areas on public or private level (Robinson, 2001).

There are approximately 10,000 MFIs in the world in which IMFIs share is 3%. Uptil now, 140 million borrowers are being served through microfinance. South Asia is covering 60% of total borrowers and 30% of amount is distributed in South Asia while Latin America is the biggest borrower of amount $48 billion (Thunstrom, 2021).

1.1 Islamic Microfinance

Microfinance is further divided into conventional and Islamic microfinance. Islamic microfinance provides financial services to the unbanked population according to Islamic finance principles. Islamic microfinance provides products on interest-free Qard-e-Hasana, cost-plus-profit-based sales (Murabaha), leasing (Ijarah mode), and insurance (Takaful) (Begum et al., 2019).

1.1.1 History of Islamic Microfinance

Modern Islamic microfinance history started in 1963 with the establishment of Mit-Ghamr Bank in Egypt. It was the first bank to offer a profit-sharing business model for investments. In 1973, "Bait-un-Nasr Urban Cooperative Credit Society" (BuN) started providing interest-free microfinance services in India (Nisar & Aziz, 2004). In 1980, the Harvard Institute for International Development established the Bank Rakyat Indonesia (BRI). In 1994, Mercy Cops started services for rural clients on Shariah-based products. In 1995, Islami Bank Bangladesh (IBBL) started Islamic microfinance for the poorest of the poor villagers on the basis of Musharkah, Mudarbah, leasing, and Bai-Mujjal (Hossain et al., 2008). In 1997, the Hodeidah Microfinance Programme in Yemen was initiated by the Yemeni government based on Islamic principles (Grace & Al-ZamZami, 2001). In 2009, the first Al Amal Islamic microfinance bank was established in the Middle East. Currently, there are approximately 300 Islamic microfinance banks, institutions, rural banks, and non-profit organisations in 41 countries. The number of IMFIs is 160 in Indonesia (Global Islamic Finance Report, 2020).

1.2   Role of Microfinance

United Nations (UN) goals of improving the lives of the poorest require the mobilization of resources to reduce poverty, hunger, disease and mortality rate. Many external factors such as governments' contribution, economic growth and security are the basic issues that hinder to achieve these goals. Microfinance can help in eradicating poverty, promote child education, health of women and children and empower women (Littlefield et al., 2003).

Microfinance can play huge role in bringing the unbanked population in financial circle. According to World Bank's Global Findex Report 2017, 1.7 billion adults are not using any kind of banking or mobile money services. This figure was 2 billion in 2014. Low-income level of individual and groups left by financial systems are considered uneconomical to serve and too difficult to reach. Most of the unbanked population is living in developing countries. Half of the world's unbanked population is living in China, India, Pakistan, Indonesia and Nigeria. China has the highest share of unbanked population of 225 million adults. India has the second most unbanked population of 190 million following 100 million and 95 million in Pakistan and Indonesia respectively. Out of these 1.7 billion adults, 980 million are women which are 56% of total unbanked adults (Global Findex Database, 2017). Microfinance can bring this 56% unbanked women population in financial circle and play its role in gender equality. According to Gender Inequality Index, microfinance can reduce gender inequality by half if women are given access to micro finance in developing countries (Zhang & Posso, 2017). Gender inequality also includes deprivation of education. Out of 103 million illiterate adults, 69% are women. More than 72 million children of world population are out of school in which 54% unschooled children are girls. The condition is worsening in developing countries, as 1 out of 4 girls does not go to school. Micro finance projects can also help in achieving educational goals for women (Boussetta, 2021).

1.3   Social and Financial Performance of Microfinance

The major goal of microfinance institutions is to offer financial services to the underprivileged but financial sustainability is equally crucial (Mia et al., 2018). That is why, microfinance institutions have to achieve dual objectives in the form of social and financial performance. Microfinance institutions' goals include achieving financial objectives without compromising on social objectives (Navin and Sinha, 2020). Remer & Kattilakoski (2021) opined that cost management is important for operational self-sufficiency. According to Hadžiahmetović, (2021), it is necessary for microfinance institutions to be self-sustainable to compete in the market. Therefore, it is important to find out the relationship between social and financial performance indicators of microfinance institutions.

2. Theoretical Background and Literature Review

The literature review includes theories and case studies relevant to this research. Institutional theory and Maqasid Al Shariah are collectively linked with this research. The foundation provided by institutional theory enables microfinance institutions to concentrate on the dual goals of social and financial performance. Since improving the standard of living for the impoverished is microfinance's primary goal, institutional theory management practices are used to balance economic and social needs. Islamic and conventional microfinance are connected by institutional theory since, aside from their own operations, these institutions also have social obligations. Islamic microfinance institutions have been founded on the Maqasid Al Shariah principle. Maqasid Al Shariah theory supports this concept with Al-Maslahah which means "Benefit to the public" (Siddiqi et al., 2019).

2.1   Social and Financial Performance Efficiency

Many studies in the literature highlight the relationship between the social and financial performance of conventional microfinance institutions. In his study, Rosengard (2004) stated that microfinance demonstrates social entrepreneurship. Both aspects of gaining profit and serving society can be achieved by MFIs. Product diversification, lowering prices, and increasing service quality can lead to achievement of both goals. Annim (2012) found out that financially efficient microfinance institutions are not efficient at reaching out to the poorest. Zaied et al. (2019), in their study explained the lack of social, financial, technical, and human resources in microfinance institutions. The study by Sukmana et al. (2020) compared the performance of conventional and rural banks in Indonesia. Conventional banks are called "Bank Perkreditan Rakyat" (BPR), and Shariah-based banks are called "Bank Pembiayaan Rakyat Syariah" (BPRS). Results indicated that rural banks working in cities are more efficient as compared to rural areas. Here the literature provides mix results regarding dual goals' achievement of conventional microfinance. There are some studies which compared financial and social performance of conventional and Islamic microfinance institutions. The paper by Ullah et al. (2019) examined, on the one hand, social performance and, on the other, financial sustainability in MFIs. The unit price of capital, labour, fund, assets, loan size, cost per borrower, female borrowers, and mission drift were included in the variables. A fixed-effect model was used for analysis. Results indicated that financial sustainability and achieving social mission through women's empowerment are difficult to achieve collectively. In their study, Amelec et al. (2015) took data from 208 microfinance institutions to find out the social and financial impact. The results revealed that policies, products, and services tailored to the needs of customers could increase

the effectiveness and efficiency of MFIs. The paper by Abdul et al. (2015) investigated the performance of IMFBs in Indonesia. The results indicated that, as compared to conventional microfinance banks, IMFBs performed very poorly. The purpose of this study by Widiarto and Emrouznejad (2015) was to compare the performance of IMFIs with CMFIs. The study by Bassem (2012) aimed to find out whether social and financial performance could be achieved simultaneously. The results indicated that both objectives could be achieved simultaneously. Fersi & Boujelbene (2016) examined the social and financial performance of IMFIs and MFIs. This study was based on Pakistani Islamic and conventional MFIs. The difference between conventional and Islamic law is Shariah regulation of IMFIs and MFIs. The study by Khan et al. (2014) compared the performance of Islamic and conventional microfinance institutions, and the results indicated that IMIFs were more cost-effective on the basis of cost per borrower as compared to CMFIs. Ahmad et al. (2020) examined the difference between Islamic and conventional Microfinance institutions with large number of dataset. Results indicated that breadth and depth of Islamic microfinance institutions exceeded conventional microfinance. In his study, Abrar (2019) calculated the impact of financial and social performance on lending interest rates. For financial performance, "ROA, ROE, and operational self-sufficiency were calculated. For social performance, "average loan size" and "number of credit clients" were calculated. The lending interest rate was calculated as a weighted average of the received interest rate by MFIs. For control variables, "size, age, location, and infrastructure" of MFIs were used. The result shows that financial performance has a significant positive relationship with lending interest rates while social performances have an inverse relationship. Nourani et al. (2021) examined outreach, financial and operational efficiency through input and output method. Providing financial services to low income people especially women increase the cost and reduce the profit. Here the comparison of financial and social performance of Islamic and conventional microfinance indicates the relationship of these performances internally. Further, asset size has been used as a moderator to find out the impact of growth on institutional performances in many financial studies. Corvino et al. (2019) examined the firm size impact on relational capital and financial performance of firm and found positive relationship. Ahmad et al (2023) examined the moderating role of firm size on UK based financial performance during crisis and results indicated significant impact.

2.2 Social and Financial Performance and External Factors

Few researchers examined the impact of internal and external factors with MFIS determinants. MFIs play an important role in economic development through their dual objectives of financial sufficiency and social performance (Mumi et al.,

2020). Thomas & Kumar (2016) found that the performance indicators of microfinance institutions are different from those of traditional institutions as social indicators are also required. Other than the analysis of internal factors, countless factors affect or are affected by microfinance institutions. Banto & Monsia (2021) examined the impact of microfinance banks and institutions on economic development by using GMM analysis for the period 1999–2016. The results indicated that MFIs' social and financial performance improved GDP per capita. Good governance leads to many multinational donors and agencies' interest in underdeveloped and developing countries (Davis, 2017).The study by Hermes & Hudon (2018) analysed 170 papers on the determinants of MFIs. Size, age, type of organisation, and lending resources are the most discussed internal factors. The external factors are government policies, politics, and other macro-economic factors. In social performance, there is a lack of factors such as outreach, gender, and rural measurement. Conventional microfinance banks are successfully implementing strategies to alleviate poverty such as Grameen Bank projects in Bangladesh. According to Shariah, interest is prohibited in Islam; therefore, the concepts of Islamic microfinance need to be implemented. IMFIs are at the initial stage of growth. The paper by Saeed et al. (2018) examined the relationship between the performance of MFIs and corporate governance. Dependent variables for financial and social performance include return on assets, operational self-sufficiency, operational cost, portfolio yield, number of borrowers, and average loan. Independent variables include bank regulations, individual lending, urban markets, Coe duality, and board size. Control variables include age, size, portfolio risk below 30, and the human development index. Results indicated that banks regulations and urban market have significant impact on firm financial performance. This paper by Akbar et al. (2019) proposed the concept of an Islamic Microfinance Community (IMC) in which the government, central bank, donors, and technological institutions collectively participate for the IMF. The study by Anwar et al. (2019) examined the impact of governance and accountability on MFIs in Indonesia and the Philippines. Results indicated that, in terms of financial and social efficiency, MFIs are lacking. The study by Tubastuvi and Pratama (2020) compared the margin of borrowing of MFIs. MFIs are criticised for taking a high margin as compared to traditional banks. This paper took data from "Otoritas Jasa Keuangan *(OJK)"* *in* Indonesia. For the dependent variable, the net profit to loss sharing margin (NPM) was calculated by operating income-operating expenses/total earning assets. For independent variables, the size of the bank was determined by taking the log of assets, leverage as long-term liabilities to total assets, the natural log of GDP, and inflation in each quarter. The study by Hussain et al. (2021) examined the government and laws impact on MFIs from Thailand, Philippines, Malaysia, Indonesia and Cambodia through DEA method. Results indicated that financial performance was high as compared to

social performance that indicates that MFIs focus on profitability. These studies indicate that many external factors are important to microfinance social and financial performance i.e. governance, GDP and inflation and can be important determinant in examining the relationship between social and financial performance of Islamic microfinance institutions.

The above literature has covered previous studies related to the financial and social performances of conventional and Islamic microfinance institutions. This literature clearly indicates that there are many studies which have covered the efficiency of MFIs and their relationship with external factors such as governance, GDP and globalization. There are few studies in which social and financial performance are compared and there is lack of studies to find out the impact of these performances on each other specifically related to Islamic microfinance. Therefore, the objective of this study is to find out the impact of social performance of global Islamic microfinance institutions on financial performance by using latest dataset.

3. Research Methodology

This research was based on secondary unbalanced micro panel data. STATA-14 was used for analysis for the period 2015-2021 with 50 Islamic microfinance institutions sample taken from World Bank MIX reports and institutions annual reports. Social performance was measured through Number of Active Borrowers (NABO), Percentage of Female Borrowers (PFEB), Gross Loan Portfolio (GLPF) as independent variables while Operational Self-sufficiency (OSS) and Financial Self-sufficiency (FSS) represented the dependent variable (outreach). Other variables, Gross Domestic Product per Capita (GDPC), Consumer Price Index (CPIN) and Regulatory Quality (REQ) were used as control variables while institution size (IZ) as moderator. Random effect model was applied through Hausman test on the specific dataset. This study has used different sizes of institutions to overcome skewness issue, log of variables were taken for normal distribution of data. In Table 3.1 below, the country wise sample of IMFIs is mentioned which is taken from Microfinance Information Exchange Database (MIX) and institutional annual reports of respective countries.

3.1 Types of Variables

This study was based on dependent variables, independent variables, control variables and moderator.

Table 3.1: Definitions and Measurements of Variables

Independent Variables				
Variable	**Proxy**	**Abbreviation**	**Formula**	**Source of Data**
Social Performance	Number of Active Borrowers	NABO	The numbers of individuals who currently have an outstanding loan balance with the Micro financial institution	World Bank Microfinance Information Exchange Report
	%age of Female Borrowers	PFEB	Number of active female borrowers / Number of Active Borrowers	
	Gross Loan Portfolio	GLPF	It includes all unsettled and unpaid amount from the clients loans	
Dependent Variables				
Financial Performance	Operational Self Sufficiency	OSS	Financial Revenue / (Financial Expense + Net Impairment Loss + Operating Expense)	World Bank Microfinance Information Exchange Report
	Financial Self Sufficiency	FSS	Operating income / (Operating expenses +Financial cost+ Loan loss provision+ Imputed cost of capital)	
Moderator				
Institution Size	Total Assets	IZ	Total assets indicate the health of institutions. The formula for institution is log of assets.	World Bank Microfinance Information Exchange Report
Control Variables				
GDP	Gross Domestic Product	GDPC	GDP is the market value of products and services product in a year per capita	World Bank Catalogue

	Per Capita			
Inflation	Consumer Price Index	CPIN	CPI calculates the average change in prices over a specific time that consumers pay for a basket of goods and services.	
Institutional Quality	Regulatory Quality	REQ	Regulatory quality indicator was used out of six institutional quality indicators. REQ are the rules development by government for different sectors development	World Governance Database

4. Results

Based on tests applied below on IMFIs dataset, results, discussion, conclusion and practical implication were developed.

$$OSS_{it} = \alpha_o + \beta_1 SP_{it} + \beta_2 X_{it} + \mathcal{E}_{it} \text{ -- Eq1}$$

Here in Equation 1, OSS_{it} indicates Operational Self-sufficiency of Islamic microfinance institutions for institution "i" for time period "t". SP_{it} indicates social performance independent variables that include Number of Active Borrowers (NABO), Percentage of Female Borrowers (PFEB) and Gross Loan Portfolio (GLPF). X_{it} indicates the control variables including Gross Domestic Product per Capita (GDPC), Consumer Price Index (CPIN), and Regulatory Quality (REQ).

Table 4.1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GLPF	180	1.34e+08	8.77e+08	0.0138	2.69e+10
NABO	180	134756.3	527659.3	300	8934874
PFEB	180	221254	3619459	0.0011	1.44e+08
OSS	180	1.194138	1.412787	-1.8228	64.81
FSS	180	.0350984	.3657634	-2.09	10.52
CPIN	180	3.760501	12.82356	-3.749145	382.816
GDPC	180	17423.32	25605.75	223.8629	189487.1
REQ	180	.0113443	.9982023	-2.396936	2.260543

(GLPF: Gross Loan Portfolio; NABO: Number of Active Borrowers; PFEB: Number of Female Borrowers; OSS: Operational Self-Sufficiency; FSS: Financial Self-Sufficiency; CPIN: Consumer Price Index; GDPC: Gross Domestic Product; REQ: Regulatory Quality)

In the above Table 4.1 the researcher used unbalanced panel data of Islamic microfinance institution for the year 2015-2021 with 450 number of observation. Standard deviation values were greater than the means that indicated heterogeneity of data.

Table 4.2 Correlation Matrix for Explanatory Variables

Variables	OSS	GLPF	NABO	PFEB	GDPC	CPIN	REQ
OSS	1.0000						
GLPF	0.2224	1.0000					
NABO	-0.1756	0.5798	1.0000				
PFEB	-0.3433	0.1971	0.6387	1.0000			
GDPC	-0.0054	0.1366	0.3812	0.2269	1.0000		
CPIN	-0.0644	0.3184	0.2613	0.1545	-0.7283	1.0000	
REQ	-0.0745	0.4061	0.7359	0.4966	0.3513	0.1468	1.0000

Table 4.2 indicates the relationship of one variable with another variable. Every variable has a perfect relationship with itself as 1. More the value close to 1 indicates strong relationship and close to 0 indicate weak relationship. Positive value indicates relationship in same direction while negative value indicates opposite direction relationship. Correlation matrix shows the negative relationship of NABO and PFEB with OSS. Further NABO and PFEB variables show a positive relationship with GLPO, GDPC and CPIN while NABO and PFEB show a positive relationship with REQ. GLPF shows a positive relationship with OSS. GDPC, CPIN and REQ show a positive relationship with GLPF, NABO and PFEB.
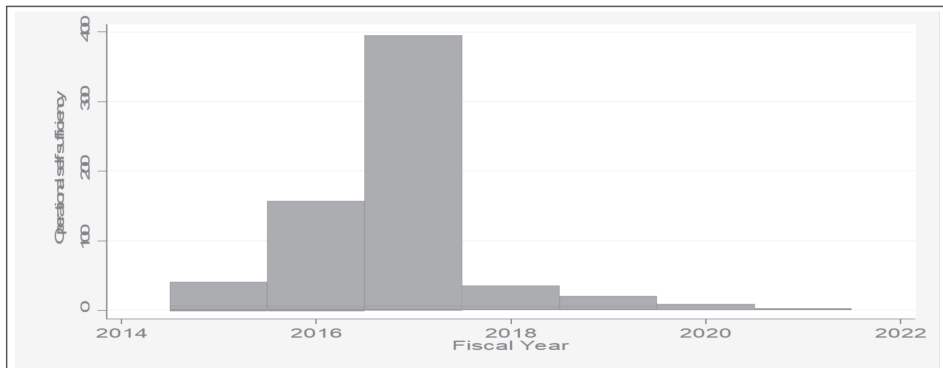

Figure 4.1: Operational Self Sufficiency - Islamic Microfinance Institutions

In Figure 4.1, Operational Self-sufficiency trend of Islamic microfinance institutions indicates that during 2015-2021 OSS remained positive.

Table 4.3 Random Effect Model Results

OSS	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
GLPF	.4265354	.1275038	3.35	0.002*	.1704365	.6826343
NABO	-8.39e-06	2.25e-06	-3.73	0.000*	-.0000129	-3.87e-06
PFEB	6.90e-06	2.37e-06	2.91	0.005*	2.13e-06	.0000117
CPIN	.5518716	.4854519	1.14	0.061***	-.4231873	1.526931
GDPC	1.336121	.7448797	1.79	0.079***	-.1600143	2.832256
REQ	-1.49439	.6717026	-2.22	0.031**	-2.843545	-.145236
Constant	-11.70099	3.783432	-3.09	0.003	-19.30024	-4.101743
Prob > F		=	0.0000			
Overall R-squared		=	0.5398			

Notes *Significant=p <0.01, **Significant= p <0.05, ***Significant= p <0.1

Dependent Variable: Operational Self-Sufficiency

In Table 4.3, GLPF, NABO, PFEB, GDPC, CPIN and REQ p- values are less than significant level 1% that indicates there is significant relationship between Operational Self-sufficiency and independent variables. In Table 4.1C, GLPF, PFEB, and GDPC coefficient values show a positive relationship between operational self-sufficiency while NABO & REQ are showing negative relationship. F-value is 0.000, that is less than 0.5 so overall the model is statistically significant. Overall R-square value is 53.9 8%. This indicates GLPF, NABO and PFEB are 53.9% explaining the model.

Diagnostic Tests: Different diagnostic tests applied to evaluate the validity of regression test application on specific datasets. Here the number of observations is more than 30, so it is assumed here that data is normally distributed (Cleff, 2019). Model vif means 1.80 that is less than 10 so there is no multicollinearity in the model (O'brien, 2007). Cameron & Trivedi's decomposition of IM-test applied for heteroskedasticity (Cameron & Trivedi, 2010). Wooldridge test is applied for auto correlation.

$$OSS_{it} = \alpha_o + \beta_1 SP_{it} + \beta_2 IZ_{it} + \beta_3 IZ * SP_{it} + \beta_4 X_{it} + \text{\euro}_{it} \text{ --------------------------Eq2}$$

Here in Equation 2, OSS_{it} indicates Operational Self-sufficiency of Islamic microfinance institutions for institution "i" for time period "t". SP_{it} indicates social performance independent variables that include Number of Active Borrowers (NABO), Percentage of Female Borrowers (PFEB) and Gross Loan Portfolio (GLPF). IZ_{it} indicates institution size as independent variable and $IZ*SP_{it}$ indicates institution size as moderator variable with social performance independent variables. X_{it} indicates the control variables including Gross Domestic Product per Capita (GDPC), Consumer Price Index (CPIN), and Regulatory Quality (REQ

Table 4.4. Random Effect Model Results with Moderator

OSS	Coef.	Std. Err.	z	P>|z|	[95% Conf.Interval]	
GLPF	.7100311	.3304077	2.15	0.039*	.0378115	1.382251
NABO	1.971873	.7872099	2.50	0.017*	.3702826	3.573464
PFEB	-1.038671	.2396225	-4.33	0.000*	-1.526186	-.551155
IZ	-1.560436	.5796288	-2.69	0.011*	-2.739699	-.3811721
IZ*GLPF	4.93e-12	7.40e-12	0.67	0.010*	-1.01e-11	2.00e-11
IZ*NABO	-1.59e-06	3.42e-07	-4.65	0.000*	-2.29e-06	-8.94e-07
IZ*PFEB	1.12e-06	2.98e-07	3.75	0.001*	5.13e-07	1.73e-06
GDPC	.1915206	1.486922	0.13	0.098***	-2.833646	3.216687
CPIN	-.2366642	.9612198	-0.25	0.007*	-2.192281	1.718952
REQ	1.141178	.9404485	1.21	0.034**	-.7721791	3.054535
Constant	-8.50572	6.276368	-1.36	0.185	-21.27509	4.263646
Prob > F	= 0.0000					
Overall R-squared	= 0.6767					

Notes *Significant=p <0.01 , **Significant= p <0.05, ***Significant= p <0.1

Dependent Variable: Operational Self-sufficiency

In Table 4.4 GLPF, NABO, PFEB, and IZ with NABO and PFEB p-values are less than significant level 1%, which indicates there is a significant relationship between operational self-sufficiency. In Table 2a, IZ *GLPF coefficient values show a positive relationship between operational self-sufficiency and independent variables, while NABO and IZ *NABO show a negative relationship. The F-value is 0.000, which is less than 0.5, so overall, the model is statistically significant. Overall, the R-square value is 57.8%. This indicates GLPF, NABO, and PFEB, with IZ as moderators, are explaining the model at 67.67%.

$$FSS_{it} = \alpha_0 + \beta_1 SP_{it} + \beta_2 X_{it} + \mathcal{E}_{it} \text{ ---Eq3}$$

Here in Equation 3, FSS_{it} indicates Financial Self-sufficiency of Islamic microfinance institutions for institution "i" for time period "t". SP_{it} indicates social performance independent variables that include GLPF, NABO and PFEB. X_{it} indicates the control variables including Gross Domestic Product per Capita (GDPC), Consumer Price Index (CPIN), and Regulatory Quality (REQ).
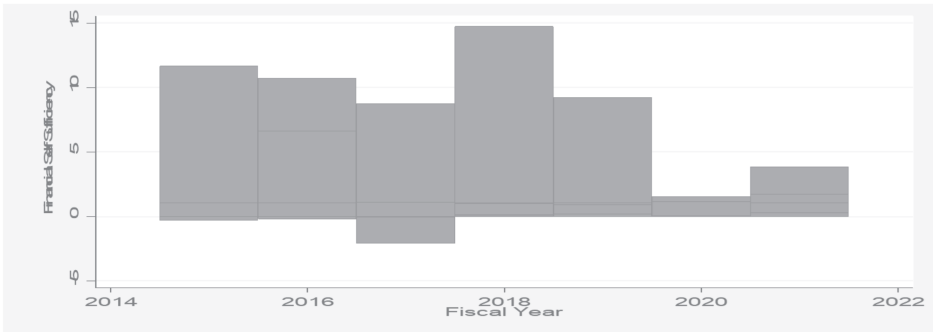
Figure 4.2: Financial Self Sufficiency- Islamic Microfinance Institutions

In Figure 4.2, financial self-sufficiency trend of Islamic microfinance institutions indicates that other than 2017, during 2015-2021 FSS remained positive.

Table 4.5: Random Effect Model Results

FSS	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
GLPF	.7414275	1306097	5.68	0.000*	.4765386	1.006316
NABO	–1.914791	.4168451	–4.59	0.000*	–2.760192	–1.06939
PFEB	–.6764604	.1989093	–3.40	0.002*	–1.079867	–.2730536
GDPC	.0005881	.000334	1.76	0.087***	–.0000893	.0012656
CPIN	–.0053758	.0022578	–2.38	0.023**	–.0099549	–.0007967
REQ	2.387189	.9196524	2.60	0.014 *	.5220478	4.252331
Constant	16.32636	4.330822	3.77	0.001	7.543043	25.10967
Prob > F	= 0.0000					
Overall R-squared		= 0.7161				

Notes *Significant=p <0.01, **Significant= p <0.05, ***Significant= p <0.1

Dependent Variable: Financial Self-Sufficiency

In Table 4.5, GLPF, NABO, PFEB, GDPC, CPIN, and REQ p values are less than significant level 1%, which indicates there is a significant relationship between financial self-sufficiency and independent variables. GLPF, PFEB, and GDPC coefficient values show a positive relationship between financial self-sufficiency and GLPF, while NABO and REQ show a negative relationship. The F-value is 0.000, which is less than 0.5, so overall the model is statistically significant. Here in the model, the overall R-square value is 71.6%. This indicates GLPF, NABO, and PFEB with control variables explaining 71.6% of the model.

Diagnostic Tests: Different diagnostic tests were applied to evaluate the validity of regression test applications on specific datasets. Here, the number of observations is greater than 30, so it is assumed that the data is normally distributed (Cleff, 2019). The model vif mean is 1.80, which is less than 10, so there is no multicollinearity in the model (O'brien, 2007). Cameron & Trivedi's decomposition of IM-test applied for heteroskedasticity (Cameron & Trivedi, 2010). The Wooldridge test is applied for autocorrelation.

$$FSS_{it} = \alpha_o + \beta_1 SP_{it} + \beta_2 IZ_{it} + \beta_3 IZ * SP_{it} + \beta_4 X_{it} + \epsilon_{it} \text{ --------------------------------} Eq4$$

Here in Equation 4, FSS_{it} indicates Financial Self-sufficiency of Islamic microfinance institutions for institution "i" for time period "t". SP_{it} indicates social performance independent variables that include Number of Active Borrowers (NABO), Percentage of Female Borrowers (PFEB) and Gross Loan Portfolio (GLPF). IZ_{it} indicates institution size as independent variable and $IZ*SP_{it}$ indicates institution size as moderator variable with social performance independent variables. X_{it} indicates the control variables including Gross Domestic Product per Capita (GDPC), Consumer Price Index (CPIN), and Regulatory Quality (REQ

Table 4.6: Random Effect Model Results with Moderator

FSS	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
GLPF	3.90e-09	1.89e-09	2.06	0.045**	9.32e-11	7.70e-09
NABO	-.0000473	.0000164	-2.88	0.006*	-.0000803	-.0000142
PFEB	.0000902	.0000214	4.21	0.000*	.0000471	.0001333
IZ	.8824857	.4390264	2.01	0.050***	-.0012287	1.7662
IZ*GLPF	-3.57e-10	1.79e-10	-2.00	0.052**	-7.17e-10	2.96e-12
IZ*NABO	4.16e-06	1.87e-06	2.22	0.031**	3.97e-07	7.93e-06
IZ*PFEB	-9.59e-06	2.47e-06	-3.89	0.000*	-.0000146	-4.62e-06
GDPC	1.638289	.580293	2.82	0.007*	.4702199	2.806358
CPIN	-.0213897	.3790703	-0.06	0.955	-.7844186	.7416391
REQ	-1.159571	.513242	-2.26	0.029**	-2.192673	-.1264682
Constant	-13.33091	4.336052	-3.07	0.004	-22.05893	-4.602892
Prob > F	= 0.0000					
R-squared	= 0.7450					

Notes *Significant=p <0.01, **Significant= p <0.05, ***Significant= p <0.1

Dependent Variable: Financial Self-Sufficiency

In Table 4.6, GLPF, NABO, PFEB, GDPC, and REQ p-values are less than significant level 1%, which indicates there is a significant relationship between financial self-sufficiency and independent variables. Here, GLPF, PFEB, and GDPC coefficient values show a positive relationship between financial self-sufficiency and independent variables, while NABO and REQ show a negative relationship. In Table 4a, the F-value is 0.000 which is less than 0.5 so overall, the model is statistically significant. Here in the model, the overall R-square value is 74.5%.

5. Discussion:

Results in table 4 indicate that increase in GLPF and PFEB increase the OSS of IMFIs. If IMFIs provide products to the maximum number of borrowers, operational self-sufficiency will decrease. This also indicates that female borrowers use given resources better than the overall number of borrowers. Islamic microfinance institutions are working to increase the depth of outreach and improve operational self-sufficiency. Islamic microfinance institutions have the capacity to cover their operating expenses which include administrative, personnel, and fee expenses. The results further indicate that CPIN and GDPC play a positive role in increasing operational self-sufficiency while REQ plays a negative role. Under Maqasid al Shariah Theory, IMFIs can fulfil stakeholders'

interests including shareholders in the form of OSS and women who represent the poorest sector of society (Siddiqui et al., 2019).

Results in table 5 indicate that mere increase in asset size will not increase OSS rather asset size increases the effect of GLPF and PFEB that is positively related with OSS. Growth is necessary for Islamic microfinance institutions to reach poorest of the poor population. Assets highlight profit and financial health of an institution and create goodwill that ultimately helps to gain more shareholders and investors and create a positive business environment. Increase in institution size increased the capacity of gross loan portfolio and outreach of the women (Corvino et al. 2019).

Results in table 6 indicate, GLPF is showing a positive relationship with FSS while NABO and PFEB are showing negative relationship with FSS stating that in orderto cover the cost of capital, IMFIs should focus on GLPF. GDPC and REQ as control variables have positive impact on FSS and CPIN has negative impact on FSS. This indicates that countries having higher GDPC have customers who need large loan sizes. If CPIN is increased, IMFIs must provide small loans to few customers who can reduce their FSS. Gross loan portfolio is the proposed outstanding loan portfolio, so if an institution increases its loan portfolio, financial self-sufficiency will increase. Further, if the institution focuses on increase in number of active borrowers and female borrowers, this will have negative impact on FSS. Navin and Sinha (2020) research model provided the similar results. This also indicates that providing large loans to a few numbers of customers is beneficial for FSS. This model's results further indicate that financial self-sufficiency is not the ultimate answer if institutions want to serve the unbanked population to reduce poverty.

Results in table 6 indicate that IZ shows positive results with FSS. This indicates if asset size is increased, FSS will increase. Now institution size as moderator indicates that GLPO and PFEB show a negative relationship with FSS while NABO shows positive results (Saeed et al., 2019; Ahamd et al.,2023). If the institution size is increased, competition will also increase to gain FSS for which institutions have to focus on increasing the number of active borrowers instead of the size of the gross loan portfolio and female borrowers and these results are in line with the study conducted by Nourani et al. (2021).

6. Conclusion:
Microfinance institutions can play a major role in achieving United Nations sustainability goals.

The objectives of microfinance institutions include accomplishing financial goals while maintaining social goals. Therefore, it is essential to comprehend the connections between these two performances. This study examined the relationship of social performance indicators with financial performance determinants of Islamic microfinance institutions. Results indicated that selected indicators are significantly related with financial performance determinants and Islamic microfinance institutions are aiming to increase their operational independence while increasing the breadth and depth of their outreach. Asset size as moderator indicates to reach the poorest of the poor for which Islamic microfinance institutions must expand. Assets show an institution's profitability and financial soundness and foster goodwill which ultimately aids in attracting additional owners and investors and fostering a prosperous corporate climate. Growth in institution size enhanced outreach to women and gross loan portfolio capacity and for financial self-sufficiency, number of active borrowers should be considered. It is concluded that IMFIs can achieve both operational and financial self-sufficiency according to their ultimate goals.

Practical Implication: IMFIs should focus on Gross Loan Portfolio and Percentages of Female Borrowers to increase operational self-sufficiency while an increase in the number of active borrowers is essential to increase financial self-sufficiency.

Limitation: This study looked at the relationship between social performance metrics and IMFI operational and financial self-sufficiency. The study can be expanded by examining the impact of financial performance measures on IMFI social performance.

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Annexure: A
Detail of Sample Size-Country Wise

Countries	IMFIs	Countries	IMFIs
Afghanistan	2	Myanmar	1
Bahrain	1	Nigeria	3
Bangladesh	3	Pakistan	3
Bosnia and Herzegovina	1	Palestine	3
Egypt	3	Saudi Arabia	2
India	3	Senegal	2
Iraq	3	Somalia	1
Jordan	3	Sri Lanka	1
Kenya	2	Sudan	3
Krygyzstan	1	Turkey	2
Lebanon	1	UAE	1
Malaysia	2	Yemen	3