Determinants of Social Performance of MFIs in Vietnam

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Abstract

Microfinance institution is known as a financial firm whose main task is to improve the life quality of lowincome populations by providing access to financial and support services. Therefore, performance of MFI, especially social performance has become an important topic. However, the number of researches in this field in general and in Vietnam in particular has been limited. As a result of that, this paper looks at social performance of MFIs in Vietnam over a period of seven years (2012 – 2018). A dataset of over 25 MFIs is used to establish the determinants of the social performance of MFIs in Vietnam. Pooled OLS model is used for this study based on. The main findings are that (i) the rise of equity in total assets ratio will have a positive impact on the increase of MFIs' social performance; (ii) by contrast, the increase in the ratio of other debt to total assets and lag profit status will reduce the ability to reach and serve customers in the low-income segment of microfinance institutions in particular, and the social performance of the organizations in general. These results will help MFIs properly understand their social performance as well as know how to their social performance in the future.

Keywords: social performance; SPI; microfinance; microfinance institutions; Vietnam.

Introduction

In today's world, where every minute million of commercial and financial transactions took place, basic human rights are not only the right to access to food, shelter, and health but also the right to financial inclusion or right to finance which can enable them to develop financial capability as well as empower them to acquire other rights. As a result of that, main priority of any nation in the world is developing a comprehensive financial system, meeting the need of funds of all individuals and organizations in the society.

However, due to the barriers of qualification, risk level, gender or collateral, the poor or low-income people in developing countries still have many difficulties in approaching financial services from formal

institutions. In the context, around the 17th century, microfinance was born and introduced by Jonathan Swift to help the poor people access to financial services. This model was later developed by Friedrich Wilhelm Raiffeisen in the form of semi-formal microfinance institutions specializing in providing financial services to the poor in rural areas in the 19th century in Germany. After that, it has been spread to other countries all over the world. Up to now, microfinance has been evaluated as one of the most effective financial tools in hunger eradication and poverty reduction in developing countries.

However, Ndanyenbah (2017) in the research of the collapse and financial sustainability of MFIs shows that since the 1990s, donors and the Government have no longer enough funds to support the poor through the activities of microfinance institutions; therefore, the long-term sustainability of microfinance institutions as well as social and financial goals of these organizations have been received the much attention of many researchers from around the world. The outstanding studies can be named as the studies of Bogan (2012); Hoque, Chishty & Halloway (2011); Hossain & Khan (2016); Kinde (2012); Lebovics, Hermes & Hudon (2016); Mwongeli (2018); Mwizarubi, Singh & Mnzave (2015); Sekabira (2013) & Tehulu (2013). However, previous studies have mainly focused on the financial sustainability aspect of microfinance institutions rather than the social sustainability aspect by increasing the social performance of MFI. As a result of that, this study is aimed at finding a way to measure the social performance of MFIs in Vietnam as well as the determinants of social performance of Vietnamese MFIs.

The rest of this paper is organised as follows. The second part presents overview of social performace of MFI, in which the definitions of the social performance of MFI concept, the measurements of social performance of MFI as well as the determinants of social performance of MFI are summarised. In the third part, the data and research methods used in the analysis of factors affecting the social performance of microfinance institutions in Vietnam will be presented. The fourth part will present the research results before moving on to the conclusions are presented in the fifth part.

The Concept of Social Performance of MFI

Have been developed from 1950s and 1960s, the definition of corporate social performance received a lot of attraction of researchers due to relationship between social performance and implications of business ethics. However, according to Wood (1991), there are different views in defining corporate social performance in general and in microfinance sector specifically.

According to CGAP (2007), social performance of MFIs simply lies in the belief that MFIs would use fund granted by private investors, organizations, the donors and Government for the poor. Especially, to ensure the belief, the MFIs are encouraged to implement the reports on performance and achievement of social objectives previously stated.

Given a quite different definition, Woller (2007) argued that social performance is not only limited in the objectives relating to the poor, but it also includes or not these objects, because the social performance does not only the final results, but also the activities and the adjustments to achieve these aims. This view was also mentioned in the report by IFAD (2006) previously, which showed that definition of social performance is not only the final influence that MFIs bring to the society, but also the transparency of the process of achieving social objectives.

Supporting this view, Avolio, Calderón Agüero, Rojas Villafuerte & Tokashiki Matsuy (2015) supposed that social performance is how an institution respects its social mission as well as the actions to achieve the missons. Hence, effective translation of the organization's mission into practical actions is one of the elements to measure social objectives.

Based on many studies of definition of social performance of MFIs, it is clear that there is no unified definition of social performance of MFIs among researchers. Some studies support that social performance is the mission for the poor, or is the result of the social activites. However, there is a broader notion that social performance does not only focus on the results but also on all the process to achieve social objectives. Based on the previous studies, the authors suppose that social performance includes both broad and

narrow meanings. According to the narrow definition, the social performance of MFIs is all the benefits, results that the MFIs bring to all stakeholders, while according to the broader concept, social performance is the establishment of an overall process from ideas, planning, actions and the final results.

Measurements of Social Performance of MFI

Corresponding to the narrow and broad concept of social performance, there are two view points in measurements of social performance of MFIs, in which the first one measuring social performance based on the final social results achieved by MFIs, and the second one measuring social performance based on the management process.

Firstly, based on the narrow approach, Hermes and Hudon (2018) supposed the idea that social performance is usually related to the social misson of the MFIs, which means reaching out to the poor by lending to individuals, households and small firms who have difficulty accessing formal credit. As a result, the studies on social performance of MFIs mostly focus on assessing two dimensions of outreach including the breadth and depth (Schreiner, 2003). Namely, breadth of outreach means the coverage of the MFIs and is measured by the number of current customers of the MFIs. Hartarska & Nadolnyak (2007), Hoque and Chisty (2011) and Bogan (2012) are the typical researchers using this variable as a social performance measurement. Additionally, the depth of outreach refers to the customer segment served by the MFI. Two most widely used criteria of depth dimension are ratio of female borrowers to total number of borrowers and average size of the loan divided by the GDP per capita of the country in which the MFI resides. Some researchers agree with this point of view are Annim (2012), Adair & Berguiga (2013) and Lebovics, Hermes & Hudon (2016). Finally, the studies in which both breadth and depth of outreach were used as the proxy of social performance measurement are the studies of Khachatryan, Hartarska & Grigoryan (2017); Abdulai & Tewari (2017) and Bibi, Balli, Matthews & Tripe (2018). Moreover, a number of studies used several dimensions to evaluate social performance of MFIs. Namely, Hermes and Hudon (2018) stated that social performance of MFIs should be assessed through a combination of three elements: outreach, gender and geography. Similarly, Awaworyi and Marr (2012) used 8 factors instead of only outreach indicator to measure social performance of MFI.

Secondly, based on the broad approach, Waithaka (2014) in the study of social performance of MFIs in Kenya supposed that the approach based on final results only measures social performance indirectly. Thus, a more comprehensive and complex measurement is preferred by the author. Namely, developed by the organization of The social performance task force (SPTF) and CERISE, SPI4 is a social performance audit tool to help financial service providers achieve their social mission via conducting the surveys focusing on 4 dimensions: target and outreach; relevance of products and services; customer benefits and social responsibility. Survey questions about MFI operations are standardized and updated frequently on the basis of responses of customers who have ever used this tool before. As a result, this method is more comprehensive and objective than the others. However, input data collection for this tool is quite difficult, especially for the studies of comparison of social performance among different countries (Hermes, Lensink and Meesters, 2011).

In case of Vietnam in where SPI4 has just been recommended to assess social performance from 2016; therefore, data of SPI4 tool is not enough to conduct data analysis, leading to social performance measurement based on narrow approach will be used in this study. In particular, this study followed Awaworyi and Marr (2012) in using eight different indicators namely outreach, percent of women borrowers, average outstanding balance/GNI percapital, number of offices, cost per borrower,operation self- sufficiency, PAR 90 days and write-off ratio in calculating social performance of MFIs in Vietnam.

Determinants of social performance of MFIs

Hartarska & Nadolnyak (2007) in the study about MFIs in 62 countries showed that the ratio of equity to total asset does not impact on social performance of the MFIs. Otherwise, mobilized capital plays an important role in increasing the number of customers and broadening the outreach. Moreover, the age and size of MFIs also have a positive impact on their social performance.

The same as the opinion of Hartarska & Nadolnyak (2007), Khachatryan, Hartarska & Grigoryan (2017) argued that MFIs should increase mobilized capital to meet the need of credit of the poor as well as reduce capital cost for the MFIs. In addition, the authors argued that commercial borrowings or borrowings from the bank could have a negative influence on the dimension of breadth of outreach. This was approved in the study of Hoque & Chisty (2011) about commercialization and changes in capital structure in MFIs in the period from 2003 to 2008. Particularly, it is showed that using financial leverage results in a rise in interest rate of the loans due to an increase in capital cost. This causes a surge in credit risk and the uncertainty in achieving social missions of MFIs. While commercial borrrowings affect negatively on social performance of MFIs, Khachatryan, Hartarska and Grigoryan (2017) indicated that grants or concessional loans are useful in improving financial outreach of the poor in the society. In addition, grants are associated with a better depth of outreach.

This conclusion is the same as the findings of many previous studies about relationship between grants and social performance. Cull, Demirg¨uc-Kunt & Morduch (2009) argued that after receiving the grants, the MFIs promote more social activites than before as well as serving more poorest clients. Hence, grants play an essential role in enhancing ability to access financial services of the poor people and improving social performance of the MFIs. Similarly, Mersland and Urgeghe (2013) also emphasized positive effect of grants on social performance of MFIs. Even that D'Espallier, Hudon and Szafarz (2013) suggested that social performance would be decrease if the MFIs did not receive grants.

The findings in the study of Lebovics, Hermes and Hudon (2016) about MFIs in Vietnam showed that MFIs benefit alot from the implicit aid of domestic and foreign donors. It reduces a burden on capital cost, makes condition for MFIs to improve financial performance and achieves the social objectives. Besides, Lebovics, Hermes & Hudon (2016) showed that variables of productivity and cost per customer also affect strongly on the outreach of MFIs. Specifically, relationship between the ratio of current number of customers to total number of employees and the outreach is positive. On the contrary, there is an negative relationship between outreach and cost per borrower.

Carrying out the test of the life cycle theory about the relationship between capital structure and social performance of MFIs, Bogan (2012) made a somewhat different judgment with the above studies when the author pointed out that grants has an negative impact on the breadth of outreach of the MFIs. Hence, according to the author, there is no link between funding and social performance. Besides, Bogan (2012) supposed that an increase in the size of MFIs brings the poor more opportunities to approach financial services.

Assessing social performance of MFI based on two dimensions of outreach of MFIs (breadth and depth), Bibi, Balli, Matthews & Tripe (2018) developed the model of Hartarska & Nadolnyak (2007) to analyse social performance of MFIs in the South Asian. The results revealed that the impact of the factors including capital structure, size, age, risk, operational cost on depth or breadth of outreach is not consistent. Specifically, while equity affects on positively on breadth of the outreach, it has a negative effect on the depth of outreach. However, both relationships are not significant. Otherwise, operational cost or features of the MFIs has a strong significant influence on social performance of the MFIs. Moreover, while age and size of the organization have a positive relationship with the breadth of the outreach, they impact on the depth oppositely.

Abdulai & Tewari (2017) had the same findings with Bibi, Balli, Matthews and Tripe (2018) when they found that influence of the determinants on two dimensions of the outreach are different. Specifically, a surge in operational cost lowers the ability to access financial services of the poor but it makes an increase in the number of female borrowers served by the MFIs. The reason was explained that a rise in outreach to female customers cause an increase in operational cost of MFIs. Additionally, the risky outstanding or productivity of employees affects on only one dimension: breadth or depth.

Related to the determinants of social performance of MFIs in the region of Middle East and North Africa in the period from 1998 to 2011, Adair & Berguiga (2013) mentioned the

role of the macroeconomic variables. Namely, polistics environment and macroeconomic conditions (gross domestic production) are selected to be variables in the model. However, the impact of them are not very significant. Otherwise, the region where they operate or lending method have a strongly positive on the depth of the outreach. According to these authors, the MFIs which mainly operate in the rural areas in stead of the other areas have a plenty of opportunities to approach more customers. Besides, group lending method enhances ability to access to financial services of the poor. Since that, it promotes social performance of MFIs.

However, the findings of Adair & Berguiga (2013) about impact of the age of the MFIs on the outreach is opposite to the results of Hartarska & Nadolnyak (2007) when Adair & Berguiga (2013) found that the relationship between the age and the outreach of the MFIs in the long run is nonlinear while in the short run, the age has a opposite impact on the outreach.

Approaching the social performance of MFIs in a completely different mothed, Awaworyi and Marr (2012) used a group of eight factors including: MFI's outreach, ratio of average outstanding balance to GNI per capita, cost per borrower, number of offices, operational self-sufficiency, percent of women borrowers, portfolio at risk after 90 days and write-off ratio to analyse social performance comprehensively. Data used for the analysis presented in this paper was collected from MixMarket. After that, they were rescaled values to follow nomal distribution. Nomalized values of eight factors were summed up into a social performance index. Based on this index, Awaworyi & Marr (2012) analysed impact of age, profit status, regulation status, asset, loans per loan officer on social performance of MFIs. The findings showed that loans per loan officer always has a significantly positive effect on social performance in all the regions of the world. In addition, size of MFI (asset) also affects on social performance of MFIs in the East Asia and the Pacific, Latin America and the Caribbean and South Asia.

In Vietnam, Nguyen Quynh Phuong (2017) showed that size and age of MFIs impact positively on social performance. Specifically, the longer an organization operates and the larger its size is, the higher its breadth outreach is. In other words, the growth rate of number of customers and outstanding value is higher and higher.

Approaching social performance from depth of outreach, Pham Bich Lien (2016) indicated that the relationship between the age of MFIs and the depth of outreach is negative. It is explained that if the longer the MFI age is, the larger the average loan granted to customer is. Hence, depth of outreach will be reduced. Otherwise, labor productivity (number of borrowers per credit officer) and credit risk (ratio of non-performing loan) affect positively on the depth of outreach of MFIs. Lien argued that an improvement in labor productivity which means a growth in the number of customers of MFIs results in a decline in average loan per borrower. Thus, the depth of outreach is better. Moreover, the MFIs which have a high credit risk tend to offer borrowings with less value in the future to reduce credit risk.

It is clear that social performance of MFIs has attracted much attention of researchers all over the world. Moreover, there are many factors have been proved to have significant effects on MFI's social performance in which capital structure and characteristics of organizations are the most popular ones. Therefore, in this study, independent variables were also selected based on literature review. In particular, independent variables used as well as their expected signs were summaried in the table 1.

Table-1 Independent variables and their expected signs

Variables	Indicators	Expected signs	References
Capstruct1	Total equity to total assets	+	Iezza (2010); Nyamsogoro (2010); Dao Lan Phuong (2019); Nguyen Quynh Phuong (2017)
Capstruct2	Total deposits to total assets	+	Hossain & Asam (2016); Iezza (2010)
Capstruct3	Borrowing to total assets	-	Bogan (2012); Phan Thi Hong Thao (2019); Sekabira (2013); Kyereboah – Coleman (2007)

Variables	Indicators	Expected signs	References
Capstruct4	Other debts to total assets	-	Bogan (2012); Phan Thi Hong Thao (2019); Sekabira (2013); Kyereboah – Coleman (2007)
Size	Gross loan porfolio	-	Bogan (2012)
BC	Number of borrowers per credit officer	+	Sekabira (2013); Kinde (2012); Hossain and Asam (2016)
LM	Lending method: Dummy variable (1: group; 0: personal)	-	Arrassen (2017).
PS	Profit status –income to total loans	+	Iezza (2010); Nyamsogoro (2010)
RS	Regulatory status (1: official institution; 0: semi – official institution)	-	Dao Lan Phuong (2019)

Research Methodology

Data collection

Based on previous researches in microfinance sector, we found that two main source of MFI's data in Vietnam often has been used by researchers are MIX Market database and data book published by Vietnam Microfinance Working Group. However, at the time this research is conducted, MIX are transitioning their dataset to the World Bank's Data Catalog; therefore, only Vietnamese MFIs data in the 2012-2018 databook was used, leading to the number of observations in this paper of nearly 200 MFIs.

Methodology

To examine the determinants of social performance of MFIs in Vietnam, the following model was chosen:

$$FI\ (i,t) = \beta o + \beta_1(Capstruct1_{i,t}) + \beta_2(Capstruct2_{i,t}) + \beta_3(Capstruct3_{i,t}) + \beta_4(Capstruct4_{i,t}) + \beta_5(LnSize_{i,t}) + \beta_6(age_{i,t}) + \beta_7(BC_{it}) + \beta_8(LM_{i,t}) + + \beta_9(PS_{i,t}) + \beta_{10}(RS_{i,t}) + \beta_{11}(LagPS_{i,t}) + \beta_{12}({}_{L}agSPI_{i,t}) + \epsilon$$

Where, β_0: constant; β_{1-12}: slopes of independent variables; ε: random error.

Dependent variables

In this paper, the calculation method for SPI of Awaworyi and Marr (2012) was used. In particular, social performance of MFIs in Vietnam is calculated through the combination of eight indicators namely outreach (A), proportion of women borrowers (B), average outstanding balance/GNI percapital (C), number of branches (D), cost per borrower (E), operation self- sufficiency (F), PAR 90 days (G) and write-off ratio (H).

$$SPI = A + B + C + D + E + F + G + H$$

Where A to H were rescaled valued of indicators, in which average outstanding balance/GNI percapital (C), cost per borrower (E), PAR 90 days (G) and write-off ratio (H) were rescaled as X formular:

$$X = \alpha * \frac{\Omega - b}{\Omega - \beta}$$

X: rescaled value

Ω is max value of raw value of indicator.

b is specific value of indicator.

To variable namely outreach (A), proportion of women borrowers (B), number of branches (D) and operation self-sufficiency (F), rescaled values were calculated as follow

$$Y = \beta + \frac{(b - \mu) * (\alpha - \beta)}{\Omega - \mu}$$

Y : rescaled value

$\boldsymbol{\alpha}$ and $\boldsymbol{\beta}$ are max and min value of rescaled value respectively.

Ω and $\boldsymbol{\mu}$ are max and min value of raw value respectively

B: specific value of indicator.

Independent variables

Based on literature review, independent variables were selected. Besides, according to many experts in microfinance in Vietnam, laggedvalue of profit status and SPI have also had impact on SPI of MFIs in Vietnam; therefore two variables named lagPS and lag SPI were added into model.

Descriptive Statistics

The data was compiled by the authors from the financial statements of microfinance institutions operating in Vietnam from 2012 to 2018. Table 2 provides descriptive statistics of the database.Regarding the Social Performance Index (SPI), the values of this index vary from 20.04366 to 50.70762 with the standard deviation is 4.2486. This indicator shows the difference in the social contribution of microfinance institutions in Vietnam during the research period.

Table-2 Descriptive statistics

	Overall sample		Semi-official institutions		Official institutions	
Variables	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Dependent variable						
SPI	44.8916	4.2486	44.9216	4.2822	44.4898	3.8393
Independent variables						
CAPSTRUCT1	0.4510	0.2831	0.47131	0.2822	0.1790	0.0840
CAPSTRUCT2	0.2636	0.2139	0.24456	0.2065	0.5193	0.1341
CAPSTRUCT3	0.2494	0.2543	0.2497	0.2620	0.2448	0.1100
CAPSTRUCT4	0.0249	0.0890	0.0225	0.0916	0.0566	0.0270
LNSIZE	13.9288	1.6488	13.7282	1.4967	16.6234	1.1771
AGE	1.9471	0.3211	1.9432	0.3326	2	0
BC	433.3734	307.6578	438.5407	315.3752	363.984	162.478
LM	0.8943	0.5772	0.9255	0.5383	0.4761	0.8728
PS	20.3098	14.3021	20.1358	14.7410	22.6461	5.4343
RS	0.0693	0.2543	0	0	1	0
LAGPS	19.0097	12.9110	18.5808	13.1016	24.7687	8.2415
LAGSPI	43.9131	4.9110	43.8801	4.9758	44.3562	4.0111

In detail, statistical figures indicate that a very large majority of the microfinance institutions in this study are operating in a semi-official form and mostly provide group loans. Besides, the number of staff working at MFIs is generally not much, resulting in the situation that a credit officer must serve a lot of customers (433.37 on average). For indicators of capital, the proportion of equity is nearly half of total assets with an average of about 45.10%. Meanwhile, for mobilized capital and loans, each is equal to about a quarter of total assets. However, the proportion of other capital is a very small number. The average income to total debt ratio is about 20.3%.

A closer look at each MFI groups shows that each credit officer working in formal institutions must serve fewer customers than their peers in semi-formal institutions, respectively 363.98 and 438.54 customers. The profits of the official group are slightly higher because the size of this group is also larger. Remarkably, the ratio of equity to total assets in the semi-formal group is more than two times higher than the official group (respectively 47.13% and 17.9%), while the opposite occurs with the mobilized capital index (respectively 24.45% and 51.93%) and other capital (respectively 2.25% and 5.66%). The loan ratio of the two MFI groups is quite similar in the research period.

Result of the Regression Analysis

The study examined the correlation coefficient between the independent variables and presented the results in table 3.

Table-2 Descriptive statistics

	SPI	AGE	BC	CAP-STRUCT1	CAP-STRUCT2	CAP-STRUCT3	CAP-STRUCT4	LAGPS	LAGSPI	LM	PS	RS	SIZE
SPI	1.0000												
AGE	0.0931	1.0000											
BC	0.1727	0.0965	1.0000										
CAP-STRUCT1	0.0464	-0.3089	-0.0325	1.0000									
CAP-STRUCT2	0.0873	0.1965	0.0252	-0.4760	1.0000								
CAP-STRUCT3	-0.0817	0.1536	-0.0294	-0.6303	-0.2577	1.0000							
CAP-STRUCT4	-0.1271	0.0461	0.1075	-0.1806	-0.0468	-0.1117	1.0000						
LAGPS	-0.0923	0.1613	-0.0023	0.1401	0.0501	-0.1655	0.0100	1.0000					
LAGSPI	0.6581	0.1412	0.1535	-0.0489	0.1661	-0.0853	-0.0913	-0.0326	1.0000				
LM	0.0191	-0.0301	0.1284	0.1899	-0.0939	-0.1326	-0.0245	-0.1022	-0.0564	1.0000			
PS	-0.0870	0.1490	0.0032	0.0937	0.0249	-0.0866	0.0082	0.7606	-0.1480	-0.0686	1.0000		
RS	-0.0258	0.0449	-0.0616	-0.2626	0.3268	-0.0048	0.0973	0.1219	0.0246	-0.1980	0.0446	1.0000	
LNSIZE	0.0667	0.0032	0.4374	-0.2278	0.2857	0.0006	0.1176	0.0611	0.2049	-0.2215	-0.0219	0.4466	1.0000

Looking at Table 4.2, it can be realized that the correlation coefficient between capstruct1 and capstruct3 is relatively high. Therefore, we have implemented a regression, in which CAPSTRUCT1 is a dependent variable and CAPSTRUCT3 is an independent variable, to test the following hypothesis:

H0: There is no multicollinearity in the model

H1: There is multicollinearity in the model

The result of this regression is presented in table 4. At a 1% significant level, the hypothesis H0 is rejected, and it can be concluded that there is multicollinearity phenomenon between the two variables CAPSTRUCT1 and CAPSTRUCT3.

Table-4Multicollinearity test

CAPSTRUCT1 is dependent variable		
Variables	**Coefficients**	**Standard errors**
C	0.6260***	0.0177
CAPSTRUCT3	-0.7016***	0.0498
R squared	0.397327	

****: significant at 1% level*

After that, a Breusch-Pagan-Godfrey test was also carried out to detect whether there is heteroskedasticity problem exists in the model.

Table-5Heteroskedasticity test

Statistics	**Breusch-Pagan-Godfrey**
Prob F (11,291)	0.0000
Prob Chi-Square (11) (Obs R-squared)	0.0000
Prob Chi-Square (11) (Scale explain SS)	0.0000

Based on the probability data presented in table 4, we can see that the model exists the

Based on the probability data presented in table 4, we can see that the model exists the Heteroskedasticity. After solving this problem by using the robust standard error method, we collect the empirical output and present them in table 5. In this table, SPI regression data on independent variables are presented in model 1. We then conducted individual tests with the components of SPI as dependent variables, and show results from model 2 to model 6.

Table-6 Estimated result

Model	**1**	**2**	**3**	**4**	**5**	**6**
	SPI	**Outreach**	**CB**	**ABPGNI**	**OSS**	**Par30**
C	21.9993***	-9.2242***	4.268***	4.6039**	0.1255	9.4372***
BC	0.0018**	0.00001	0.0015***	0.0014***	0.0002***	0.00001
Capstruct1	1.4930*	0.1470	0.5530	0.7433**	0.6818***	-0.2042
Capstruct2	0.7204	-0.0903	0.1848	0.0792	0.5589	0.1608
Capstruct4	-2.4854**	-0.9930**	1.1413**	-4.0097***	0.2642	0.1314
LNSize	-0.3043**	0.7321***	-0.1802***	-0.3003***	-0.0037	0.0492*
Age	0.2744	0.3558***	0.3849**	0.2261	0.1233**	-0.0085
BC	0.0018**	0.00001	0.0015***	0.0014***	0.0002***	0.00001
LM	-0.0139	-0.6290***	0.1950**	0.0558	-0.0916	0.0704**
PS	0.0426	-0.0033	-0.0289***	0.0306*	0.0063***	0.0027
RS	0.9056	-0.6475	-0.9450***	-0.2725	-0.2368	0.0031
LagPS	-0.0650*	0.0038	0.0187***	-0.0269	0.0077***	-0.0157
LagSPI	0.5769***	-0.0095	0.1086***	0.1246***	0.0019	-0.0005
R squared	0.474196	0.5537	0.4737	0.4130	0.1874	0.1184

*Notes: standard errors are in brackets. *, ** and *** denote significance at the 10%, 5% and 1% levels respectively*

Empirical estimates indicate that CAPSTRUCT1 has a positive impact on SPI with a 10% significance level. This implies that the greater the ratio of capital to total assets, the more the social effects will be generated in the operation of microfinance institutions. This conclusion is consistent with the studies of Khachatryan, Hartarska & Grigoryan (2017). This variable also has positive and significant effects on the average outstanding balance/GNI-per-capita ratio and operational self-sufficiency index (the significance levels are 5% and 1% respectively).

CAPSTRUCT4, however, has a negative relationship with the index of social performance with a significance of 5%. The results show that in Vietnam, the increase of other capital sources makes the social efficiency indicators of microfinance institutions decrease. This is similar to the conclusions in the study of Bogan (2012). This index also has negative effects on Outreach and ABPGNI indexes (respectively with 5% and 1% significance level) while having a positive impact on CB. This can be interpreted as the larger the size of other capital resources will reduce the ability to access customers, reduce the size as well as increase the cost of loans per customer.

Unfortunately, CAPSTRUCT2 shows a positive impact on SPI but the results are not statistically significant. In all other regressions, this variable also does not show any remarkable estimations.

The customers per credit officer ratio has a positive impact on SPI with a statistical significance of 5%, implying that as the number of customers a credit officer serves rises will lead to an increase in the level of social efficiency of the microfinance institution. In contrast, the size of MFIs is negatively related to SPI at the 5% significance level, suggesting that the size of those institutions and social performance index are inversely correlated.

LagPS and LagSPI are statistically significant in the regression model with SPI. However, while the result of LagSPI reveals that last year's social performance will have a positive effect on this year's index (at a 1% significance level), profit from the previous period shows the opposite effect (at the 5% significance level).

When looking more specifically at the regression models of SPI's components, it can be observed that in model 2 (CB ratio), most independent variables are statistically significant except CAPSTRUCT1 and CAPSTRUCT2. Whereas in model 6 (Par30 ratio), only the outcome of the lending method and the size of the MFI are statistically significant for this variable. These two independent variables are also 1% significant in model 1 (Outreach ration).

Model 4 (ABPGNI ratio) and model 5 (OSS ratio) show that the influence of the independent variables in the two models is quite similar. Remarkably, there are 3 variables including CAPSTRUCT1, PS, and BC which have positive effects on the dependent variables. This suggests that the increase in the ratio of equity, profit, and number of customers that a credit officer serves helps to increase the average outstanding balance/ GNI-per-capita ratio and operational self-sufficiency index.

Discussions of the Result

1. *Effects of capital structure variables on the social performance of Microfinance institutions*. The results from the regression model indicate that the owner's equity and other debts have a pronounced impact on the social performance of the microfinance institution, however, the dynamic impact of these two variables is contrary.

Equity ratio on total assets (CAPSTRUCT1): The regression coefficient of CAPSTRUCT1 is 1.49, which implies that it has a positive relationship with the social performance index. In other words, the rise of equity in total assets ratio will have a positive impact on the increase of SPI in microfinance institutions. This result is somewhat inconsistent with the conclusions of Hartarska & Nadolnyak (2007) when the authors argued that equity prevents MFIs from accessing and providing services to customers, and thus harm the social performance of the organizations.

Contrary to the study by Hartarska & Nadolnyak (2007), mobilized capital is suggested to have a positive impact on social performance when Richardson (2003) pointed out that the mobilization will help microfinance institutions attract savings from customers at higher income levels – those who will support many microfinance institutions in

offset the fixed costs, and help they have the capital at reasonable cost to serve poor customers. Therefore, this type of capital has a favorable impact on the social efficiency of MFIs. In this study, the relationship between mobilized capital and social efficiency index is also positive, but unfortunately, it is not statistically significant. The reasons for this output are that the microfinance institutions in Vietnam currently mainly exist as semi-formal institutions with certain limitations on the total amount of mobilized voluntary saving deposits. Therefore, the impact of mobilized capital on social efficiency is not statistically significant.

Nevertheless, the impact of the owner's equity is noticeable and completely similar to the results of the research on the social performance of microfinance institutions performed by Khachatryan, Hartarska & Grigoryan (2017). In detail, because the sources of equity of microfinance institutions in Vietnam are mainly from the contributed capital and received funding with very low costs, especially in semi-official organizations. Therefore, they have created favorable conditions for those microfinance institutions to minimize capital costs, reduce loan interest rates as well as loan repayment risks of customers. As a result, the relationship between the organizations and the customers is increasing cohesion and strong. Moreover, the attractiveness of the costs of capital also makes conditions for MFIs to reach more potential customers at different income levels. As a result, MFIs' customer networks are also becoming more diverse and richer, which help to improve the social performance of the organization.

Other liabilities on the total assets (CAPSTRUCT4): CAPSTRUCT4 has a regression coefficient of - 2.48, which reflects an inverse relationship with the SPI. This figure implies that an increase in the total of other liabilities on the total assets ratio will the social performance of an organization inefficient. This result is completely compatible with the recognition of experts in the field of microfinance. In particular, according to a management of a large-scale and reputable microfinance institution in the market, compared with the cost of using mobilized capital, the cost of using other debt sources is somewhat higher. Therefore, the increase in the ratio of other debt to total assets will lead to an increase in operating costs at MFIs, thereby indirectly rises the financial burden on customers, as well as reduces the ability to reach and serve customers in the low-income segment of microfinance institutions in particular and the social performance of the organizations in general.

2. The impact of other variables on the Sustainable level of MFIs in Vietnam. Besides the impact of capital structure to the level of sustainability of microfinance institutions in Vietnam, other elements belonging to the organizational characteristics such as size, borrower per lending officer (BC), SPI of the previous period (lag SPI), and the average return on total outstanding loans (lag PS) have implications for SPI with a statistical significance level of 1 % or 10%.

Scale (log size): The empirical estimate shows that the regression coefficient of log size is- 0,304, indicating a negative relationship with SPI. This also means that under the condition of other factors constant, if the organization's scale increases by 1%, SPI will decrease by 30.4%. This result is somewhat opposed to the results given by Awaworyi and Marr (2012), Bogan (2012); Hoque and Chisty (2011); Khachatryan, Hartarska & Grigoryan (2017) and Hartarska & Nadolnyak (2007) when the authors identify the scale have a positive impact on the social efficiency of the microfinance institution. Specifically, according to the study of Khachatryan, Hartarska & Grigoryan (2017), the larger the microfinance institutions, the greater the economic advantage by scale. In particular, the large scale also creates advantages for microfinance institutions to have the opportunities to access more loans and savings, therefore, the social performance of the organization is also improved. Not entirely consistent with this opinion, Bibi, Balli, Matthews, and Tripe (2018) argued that large-scale microfinance institutions can reach more customers, but that does not mean that large-scale financial institutions can serve more customers in lower-income segments than smaller ones. Therefore, the impact of the scale on social efficiency is unlikely to be positive. In this study, the results indicate that the scale and social efficiency of Vietnamese MFIs have a negative

relationship. The reason for the discrepancy between this output and the results in previous studies is probably because our study had a different way of accessing microfinance institutions' social performance indicators. In particular, previous studies have largely used only two indicators as the width and depth of access to reflect the social efficiency of the microfinance institutions. However, in this paper, the index reflects social performance as a general indicator consisting of 7 factors with the evaluation of social efficiency from more dimensions. Therefore, the results of the effects between these studies may be different.

The number of borrowers per lending officer (BC): BC has a regression coefficient of 0.001, which indicates a positive relationship with SPI. This estimation result reflects that when other factors are constant, if BC increases by 1%, SPI will increase by 0.1%. This result fully consistent with the conclusions given by Pham Bich Lien (2016). In details, in the dissertation on the development of microfinance activities in credit institutions in Vietnam, Pham Bich Lien (2016) has shown that the productivity of employees or the number of customers on a credit officer has a favorable impact on the depth of access in particular and social efficiency of MFIs in general. This is due to the fact that customers in the low-income segment with a high level of risk are often given credit in the form of group lending instead of individual lending. Therefore, the number of customers each credit officer manages for this customer segment is often high, and as a result, the depth and width of access are also improved, contributing to a rise in the indicator of social performance of MFIs.

The SPI of the previous period (Lag SPI): The regression coefficient of lag SPI is 0.576, which indicates a positive relationship with SPI. It reveals that in the condition that other factors remain constant, if SPI of the previous year has changed by 1%, SPI of this year will change in the same direction at 57.6%. This result is consistent with the data collected from an in-depth interview with experts in the field of microfinance. Specifically, according to those experts, MFIs often tend to maintain and develop the social values brought to the community based on the activities of the previous periods.

The Average interest on total outstanding loans of the previous period (Lag PS): This variable has a regression coefficient of - 0.06, which indicates an inverse relationship with SPI. In the condition that other factors remain constant, this coefficient shows that if the average return on total outstanding loans of the previous year changed by 1%, SPI will fluctuate inversely by 6%. This result is somewhat similar to the suggestions of Awaworyi and Marr (2012) when they studied the social performance of microfinance institutions in different countries of the world. In this research, they supposed that, in low-income countries, microfinance institutions operating for non-profit are often assessed to be more socially effective than MFIs operating for profit.

Conclusion

This study was conducted to examine what determinants influence the social performance of microfinance institutions in Vietnam. First, SPI is calculated based on data collected from Vietnamese microfinance institutions in the period 2012 - 2018. Next, regression models were estimated with independent variables related to the capital structure, MFI's size, number of borrowers per credit officer, the organization's legal status and lending method.

Empirical results reveal that the ratio of equity to total assets has a positive impact on the performance of microfinance institutions. This is because the sources of this capital in Vietnam mainly come from contributed capital and received funding with very low costs, thereby, facilitating microfinance institutions to minimize capital costs as well as reduce interest. Other capitals on total assets ratio, on the other hand, have a negative relationship with SPI because the increasing costs of this capital source have put pressure on operating costs of MFIs.

The customers per credit officer ratio and the size of MFIs has effects on SPI with a statistical significance of 5%, but in opposite directions where the former has a positive effect and the latter has a negative effect. Besides, while the result of LagSPI reveals a positive relationship with this year's index (at a 1% significance level), profit from the previous period shows the inverse effect (at the 5% significance level).

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