International Journal of Business and Technopreneurship
Volume 8, No 2, June 2018 [137-148]

Remodeling Index for the Microfinance Institutional Sustainability: A Theoretical Review

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ABSTRACT

Sustainability Index plays a vital role in measuring the sustainability level by using multi-dimensional constructs. Sustainability of Microfinance institution (MFI) may simply be defined as the capacity of the MFI to continue as a going concern by providing services to targeted people, ignored by the conventional financial institutions. The purpose of this study is to conceptualize an index that can measure the sustainability of Microfinance institution. Hence, this paper is primarily reviewing the existing literature on measuring sustainability of MFI while discussing the shortcomings of the current measurement of sustainability. Furthermore, this study is the first of its kind to propose a comprehensive index comprising of financial (financial self-sufficiency and operational self-sufficiency) and outreach (depth of outreach and breadth of outreach) aspects to determine the overall sustainability of MFI.

Keywords: Microfinance Institution, Sustainability, Sustainability Index.

1. INTRODUCTION

Since the inception of civilization, humanity is facing and fighting against poverty. Poverty arises due to the limited availability of credit to the poor people (Tehulu, 2013). According to Consultative Group to Assist Poor (CGAP), poverty can be reduced if poor people of the society are given facilities including loans, fund savings and transfer, and insurance (CGAP 2004). Microfinance has been considered as a flexible solution to overcome poverty (Syedah, Shan, Anum, Zeshan, & Kaleem, 2013; Rahman, & Mazlan, 2014). Microfinance institutions (MFIs) are the key credit providers to poor people, who are lacking collateral, in many developing countries. These institutions provide facilities including credit, insurance and deposit accounts to the needy people (Quayes, 2015; Tehulu, 2013). Thus Microfinance, by empowering poor, is a concept of poverty reduction. According to Microcredit Summit Campaign, in 2007, MFIs have shown a tremendous growth globally and their client portfolio has reached to 155 million (Yimga, 2015). Infacet in 2011, Microfinance institutions achieved a milestone of reaching more than 200 million poor across the globe (Maes, & Reed, 2012).

Basically, there are two major goals for Microfinance institution (Chenuos *et al*. 2014). The first goal of MFI is to contribute to development by approaching a maximum number of clients and reaching the poorest (Nanayakkara, 2012). The second important goal for MFI is to reach poor clients by achieving institutional financial sustainability. According to Olasupo, Afolami, and Shittu (2014), MFI management should be efficient in promoting both the objectives. Woller, Dunford, and Woodworth (1999) also, introduced two approaches known as "The Institutionists approach" and "The Welfarists approach." The Institutionist approach sticks with financial sustainability of institution and poverty alleviation simultaneously whereas, Welfarists approach emphasized on reaching poor clients by using subsidized funds.

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Microfinance institution promises to develop its customers and provide them capital to overcome poverty, therefore, understanding of MFI sustainability is essential for the well-being of individuals and business (Muwamba, 2012). In Microfinance, sustainability may simply be defined as the capacity of Microfinance institution to continue as a going concern by providing services to targeted people ignored by the conventional financial institutions (Rao, 2014). Furthermore, sustainability for MFI is to be independent from any grants or subsidies. When credit providers receive gifts and grants, profitability is achievable, however, long term sustainability becomes questionable (Bogan, 2012). The sustainability achievement, in this case, means attaining the financial sustainability along with the attainment of reduction in poverty level (Nanayakkara, 2012).

The measurement for sustainability of MFIs is also, still, an unresolved issue. Several measures and indices were developed to determine the sustainability level of MFIs. This study aims to highlight the issues in existing measure of sustainability and the limitations of the already developed indices. Hence, the objective of this paper is to review the existing literature on sustainability evaluation of MFI, thus, proposing a comprehensive sustainability index.

2. BACKGROUND OF STUDY

In this section, we will discuss the sustainability of Microfinance institution, different measurements used for sustainability and the issues in measuring sustainability.

2.1 Sustainability

The term sustainability is commonly used in many fields such as environmental science, development economics, and agricultural sector development particularly in the developing world where agriculture is the major economic sector or covers the significant share of the gross domestic production of the countries. Sustainability is commonly known as the organization's ability to cover both its operational and financing cost from its revenues and also expanding its services (Rahman, & Luo 2012). From the perspective of Microfinance, sustainability is defined as the capacity of MFI in becoming the service provider to the deprived, while, at the same time, able to continue operating indefinitely. In order to ensure a long-term sustainability is achievable, MFI should not rely on any gifts, grants or subsidies. This argument was supported by Bogan (2012) as he found that subsidy and MFI sustainability are inversely related. Therefore, if there is subsidy injection to the financial system of the institutions, their ability to be sustainable become under question as subsidies may cease at some point in time. Moreover, long-term use of grants represent incompetency of MFI in attracting funds from the market due to inefficient operation and costly outreach (Bogan, 2012).

Morduch (1999) stated that MFI cannot achieve financial sustainability. They concluded that operational costs for small loans are very high, and income generated by these operations does not ensure profits. In line with this finding, Brau, and Woller (2004) found that unlike formal sector financial institutions, mostly MFIs were unsustainable. The majority of MFIs in operation were depending on grants and government support to continue their operations. Hermes, and Lensink (2007) further endorsed that providing expensive products results in the unsustainable MFI as the cost is covered using subsidies.

Contradicting to the above findings, Littlefield, and Rosenberg (2004) stated that MFIs could be cost effective if they are good at loan recovery, charge suitable interest rate and continuously work towards efficiency. Promoting experimentation, innovation, good management, and institutional capacity are also important in determining MFI sustainability (Aghion, & Morduch 2000). In fact, MFI should apply banking principles and increase their profitability to attract commercial investors which will help them to be free from grants and donations (Gibbons, &

Meehan 1999). Thus, financially sustainable MFI should also manage its cost by adopting a strategy of economies of scale, targeting both non-poor and poor clients (Navajas, 2000).

2.1.1 Financial Sustainability

Financial sustainability (FS) determines MFI ability to recover the cost of its operations from revenues generated (Rahman, & Luo 2012). It is not restricted to cover MFI cost from revenue only, rather it provides an ongoing financial service to the target poor (Yaron, 1994). Financial sustainability is possible if microfinance institution generate enough profit to continue its operations without subsidies, covering all its expenses (Ayayi, & Sene 2010; Rao, 2014). Financial sustainability is negatively related to debt and grants (Sekabira, 2013). Thus, MFI is financially sustainable if it can cover its financing cost (inflation adjustment), operating cost and cost for its growth without subsidies (Christen, 1995).

According to CGAP (2004), if MFI want to reach a maximum number of targeted poor it must achieve financial sustainability. Due to non-availability of financial intermediaries, financial services were not available for poor people. Financial sustainability is not the only solution for this problem. Rather, it is an indicator of redemption for the institution from donor funds to reach a significant level of self-dependency (CGAP 2004). Thus, financial sustainability of MFI means reaching the maximum number of poor people while reducing the cost of the transaction and fulfilling client needs by offering better products and financial services.

Financial sustainability, a physical parameter, can be monitored and measured using indicators including operational self-sufficiency (OSS) and financial self-sufficiency (FSS). Several studies were found in the literature that have measured financial sustainability by using either FSS or OSS (Rai, & Rai, 2012; Islam, Porporato, & Waweru, 2014; Lenssen, Nijhof, Roger, Kievit, Dutta, & Das, 2014; Chaves, & Gonzalez-Vega, 1996; Cull, & Morduch, 2007; Rahman, & Mazlan, 2014). FSS and OSS are discussed in the next sections.

2.1.2 Financial Self-Sufficiency

According to Morduch (1999), FSS is the ability of an organization to complete its operations without depending on subsidies. FSS has become a popular measure of MFI performance and is adopted by the Micro Banking Bulletin (MBB) as principle measure of financial sustainability (Manos and Yaron 2009). Based on FSS data published in the MBB of spring 2008, it appears that out of 340 MFIs reviewed in 2006, 244 (72%) were financially self-sufficient. Furthermore, according to the FSS ratios presented in the various MBBs, the share of MFIs becoming financially self- sufficient has risen significantly in recent years.

According to Gibbons and Meehan (1999), attaining FSS is important for MFI to benefit the poor households. It is also essential for approaching the maximum number of poor people living at the bottom line. As MFI begin to be an independent of donor funds and adopt banking principles, they tend to reduce their cost and innovate better products and services (Conning, 1998). The reduction in cost leads to profitability and MFI would be able to invest in capital funding. Furthermore, it will help in massive increase of outreach to the poor and MFI would significantly contribute to the alleviation of world poverty.

FSS measures MFI ability to cover its costs while considering few adjustments to operating expenses, inflation, subsidies, and revenues (CGAP 2003). These adjustments represent the ability of MFI in covering its cost and expanding its operations without being subsidized. Specifically, FSS refers as MFIs ability to cover its operating expenses while making subsidy and inflation adjustments with its adjusted income produced from its financial operations and services.

2.1.3 Operational Self-Sufficiency

OSS refers to MFI ability to pay the expenses from operating profits. This expenditure covers all cost of operations such as financial expense incurred, expenses from operation and loan loss provision expense. OSS has become a popular measure of MFI performance and has been used in several studies as a principle measure of financial sustainability (Annim, 2012; Bogan, 2012; Lenssen *et al*. 2014). According to Microfinance information exchange (MIX) market, sustainability of MFIs is determined by using OSS. Following the MIX Market definition of sustainability Bogan et. al., (2007) described an MFI being operationally sustainable when OSS reaches 100% and financially sustainable when OSS reaches 110%. Several studies are found in literature to determine the sustainability of MFIs by using OSS (Muwamba, 2012; Nadiya *et al*., 2012).

3. ISSUES IN MEASUREMENT OF SUSTAINABILITY

The measurement of sustainability has become a crucial issue in the field of subject as inconsistent measures were used in the past studies for its estimation. There is no definite measure available in determining sustainability level of microfinance institutions (Mia *et al*., 2015; Rai, & Rai, 2012).

For instance, FSS ratio has become a popular measure of MFI performance and it has been adopted by Micro Banking Bulletin (MBB) as its principal measure of financial sustainability (Manos, & Yaron, 2009). Kinde (2012) in his study used FSS to measure MFIs financial sustainability in Ethiopia. Kar (2013) has also used FSS ratio as an approximation for financial sustainability of MFIs. Financial sustainability for MFIs in East Africa was also measured using FSS ratio (Tehulu, 2013). Kazemian, Rahman, Ibrahim, & Adeymi, (2014) used FSS as an estimation for sustainability of Amanah Ikhtiar Malaysia. The study focused on the relationship between market orientation and MFI sustainability. Rahman, and Mazlan (2014) investigated the drivers of MFIs financial sustainability in Bangladesh and they implement FSS ratio to estimate the level of sustainability. Other studies (see, for example: Nwachukwu, 2014; Cull, & Morduch, 2007; Chaves, & Gonzalez-Vega, 1996) were also using FSS ratio in determining MFIs sustainability.

Contradicting to the above, Bolan emphasized that to be financially sustainable, MFI need to be operationally self-sufficient. Lenssen *et al*. (2014) and Kaur (2014) used OSS to measure the sustainability of MFIs in India post-Andhra Pradesh crisis. In another study, Ngo *et al*. (2014) investigated the relationship between the scale of operation and MFIs sustainability in Bangladesh. In their study, OSS ratio was used to measure sustainability. Islam *et al*. (2014) also, used OSS to measure the MFIs financial sustainability. They investigated the impact of interest rate cap effect and cost structure on the financial sustainability of MFIs in Bangladesh. Furthermore, to estimate the sustainability of 217 MFIs for year ranging 1998-2006, OSS ratio was used by Ayayi, and Sene (2010).

Specifically, several indices were used to determine the sustainability of MFIs. The first index is Subsidy dependence index (SDI), which analyzes the sustainability of four rural financial institutions (RFIs) (Yaron 1992). These institutions include Badan Kredit Kecamatan Indonesia, Grameen Bank Bangladesh, Bank for Agriculture and Agricultural Cooperatives Thailand and Bank Rakyat Indonesia Unit Desa. SDI was designed to evaluate the progress of RFI for getting free from dependence on subsidies. It also evaluates the level of dependency on grants when RFIs are compared with a similar institution. It also investigates the degree of interest RFI should adopt to be independent of subsidies. Negative SDI indicates not only that RFIs have attained FSS but also profits exceeding the number of subsidies and RFI have the capacity to

reduce their lending interest rate. Zero SDI means RFIs have achieved FSS. Contrary, if SDI is 100 percent, the lending rate should be doubled to reach FSS.

The second index developed by Christen (1995) is commonly known as financial self-sufficiency index. Three types of adjustments were made to revenues and costs when the FSS index is computed: (i) adjustments for inflation; (ii) adjustments for subsidies; and (iii) adjustments for loan loss provisions and write-offs. The adjustment for inflation counters the decrease in value of financial assets. Meanwhile, the adjustment for subsidies accounts for three types of grants: concessionary borrowings, cash donations, and in-kind grants. The adjustment for loan loss provisions and write-offs accounts for variation in recognition of delinquencies and writing off of bad loans. Christen (1995) pointed that the SD index and the FSS index are compatible, and that the FSS index adjusts the financial statements in line with market rates as if the MFIs were not subsidized.

Another financial sustainability index was developed by Rai, and Rai (2012) to evaluate the sustainability level of MFIs in India and Bangladesh from 2009-2010. Sustainability score of MFIs was determined using four financial indicators including: (i) Portfolio at risk greater than 30 days (PAR>30); (ii) Operating expense ratio; (iii) leverage; and (iv) OSS. Weights were assigned to these indicators based on its importance in different microfinance research agencies worldwide. The base score for MFIs sustainability in the year 2010 was 63.25.

Bhanot, Bapat, and Connelly (2015) also, developed a sustainability index for MFIs in India. Their sustainability index includes not only financial indicators but also outreach measures: OSS, breadth of outreach, and depth of outreach. The study used two different ways for assigning the weights to the above indicators for obtaining sustainability scores. Firstly, equal weights were assigned to all the indicators. Secondly, different weights were assigned to each indicator depending upon their importance. According to this index, MFIs sustainability score range varies from 0.80 (the maximum) to 0.26 (the minimum).

Above studies depict that financial sustainability, a physical parameter, can be monitored and measured using SDI, PAR>30, OER, leverage, OSS and FSS ratios. CGAP, MIX market and Micro Banking Bulletin (MBB) have also applied FSS and OSS in their principle instruments for calculating financial sustainability (CGAP 2003; Manos, & Yaron 2009). Several studies also stress that financial sustainability is measured as financial self-sufficiency together with operational self-sufficiency (Rai, & Rai, 2012; Islam *et al*., 2014; Lenssen *et al*., 2014; Chaves, & Gonzalez-Vega, 1996; Cull, & Morduch, 2007; Rahman, & Mazlan 2014).

According to Bhanot *et al.,* (2015), reaching financial sustainability is just accomplishing one dimension of sustainability. The main objective of MFIs is to provide credit facilities to maximum number of poor to alleviate poverty. Therefore, sustainability of MFIs cannot be measured by ignoring outreach to the poor. Zeller, and Meyer (2002) introduced "the triangle of microfinance" which was consistent with the above studies. According to Zeller, and Meyer (2002), successful microfinance institutions should be financially sustainable, have positive outreach to the poor and should be helpful in poverty alleviation. Yaron (1992) also, considers financial sustainability and outreach as a benchmark for sustainable MFIs if subsidy dependence is zero. Under Welfarists approach, Kipesha, and Zhang (2013) results do not show the tradeoff.

Mahajan, and Ramola (1996) measures the sustainability of MFIs by using financial sustainability and outreach separately. They showed concern that if financial sustainability and outreach are measured separately, the increased focus on financial sustainability results in the shift in outreach. Millson (2013) also measures sustainability using both outreach and financial sustainability and he found the same results as discussed by Mahajan, and Ramola (1996).

Mutually, FSS and outreach are necessary for MFI performance without displacement of one for the other (Kinde, 2012; Kar, 2013). In a study by Annim (2012), analysis of data show that MFIs that have better depth of outreach were operationally self-sufficient. Their study investigated the impact of FSS and OSS on outreach. Another study was carried out to determine the trade-off among outreach and financial sustainability by using operational self-sufficiency as a measurement for financial sustainability (Zerai, & Rani 2012). Results suggest that outreach and financial sustainability were interdependent.

Other researchers also found that sustainable MFIs achieve financial sustainability along with poverty outreach simultaneously (Crombrugghe, Tenikue, & Sureda, 2008; Adhikary, & Papachristou, 2014). Morduch (2000) and Paxton (2002) clearly discuss the winning proposition for sustainability of MFIs if both costs of operation and maximum outreach to the poor people were achieved without external support by donors funds or government subsidies. Similarly, Rai, and Rai (2012) also found that breadth of outreach influence OSS of MFI. Thus, sustainability of MFI should be measured using financial sustainability and outreach (Zeller, & Meyer, 2002; Annim, 2012; Quayes, 2012).

The above discussion clearly shows that overall measurement of sustainability level of MFIs has been a serious problem that is not yet resolved. Without understanding the sustainability level of microfinance institutions, it would be insignificant to investigate the drivers which influence MFIs sustainability. Therefore, future research should be conducted to measure the overall sustainability of MFI by using both indicators of financial sustainability and outreach.

4. METHODOLOGY

This paper tries to determine the measurement for sustainability of Microfinance institution. The objective is attained by targeting the papers that used different measures for sustainability of MFIs. Sustainability has multiple meanings; therefore, studies relevant to microfinance financial sustainability and outreach aspects are critically reviewed. The sample consisted of peer-reviewed articles published, and collected using various search engines (science directory, google scholar and journals websites). The search was restricted but not limited to keywords microfinance sustainability, outreach and performance.

Few studies have proposed the sustainability index for MFIs which are also discussed and critically examined. The issues related to the existing measurement of sustainability are discussed in section 3. In the next section, shortcomings of the existing measurement of sustainability are reviewed and a better sustainability index is proposed which considers all the dimensions of MFIs sustainability.

5. REVIEW FINDINGS

This section reviews the findings of the above literature. Previous literature clearly shows that sustainability is commonly measured using the indicators of financial sustainability including financial self-sufficiency and operational self-sufficiency. Several indices were also developed by Yaron (1992); Christen (1995); Rai, and Rai (2012); Bhanot *et al*. (2015) for measuring the sustainability of MFIs. The consistency and accuracy of these sustainability instruments are questionable as they do not consider the dual mission of Microfinance, achieving both financial sustainability and outreach.

The triangle of microfinance theory presented by Zeller, and Meyer (2002), clearly mentioned that success of MFIs is not dependent only on financial sustainability but also on its outreach and impact of outreach. Similarly under The Welfarists approach, for an institution to be

sustainable, the core function of MFIs were to reach the maximum poor clients (Morduch, 2000; Hulme, & Mosley, 1996; Woller *et al*., 1999; Kipesha, & Zhang, 2013).

The Subsidy dependence index by Yaron (1992) only determines the variation in average lending interest rate to adjust for complete subsidy independence. . The subsidy dependence is calculated by

$$S= A\ (m-c) +[(E*m) +P] +K \quad (1)$$

The financial ratio that is suggested as the Subsidy Dependence Index (SDI) is:

$$SDI = \frac{S}{LP*n} \quad (2)$$

According to Nanayakkara (2012), the reliance on SDI is not acceptable as it indicates the dependence level of subsidies only and does not consider the outreach. When MFI tends to achieve subsidy independence by using SDI, it deviates from its mission of poverty alleviation by charging a high-interest rate to poor customers.

In addition, financial self-sufficiency index by Christen (1995), as evident, only determines the ability of MFI to cover its expenses by being independent of subsidy. The formula used for the measurement is;

$$FSS = \frac{ADJUSTED\ OPERATING\ REVENUE}{ADJUSTED\ (FINANCIAL\ EXPENSE+NET\ LOAN\ LOSS\ PROVISION+OPERATING\ EXPENSE)} \quad (3)$$

The index determines three adjustments: (i) adjustments for inflation; (ii) adjustments for subsidies; (iii) and adjustments for loan loss provisions and write-offs. Overall, sustainability of MFI should be measured using both financial and outreach indicators. Therefore, financial self-sufficiency index is only one of the indicators of the sustainability of MFI and it measures only partial sustainability. Moreover, according to Bhanot *et al*. (2015), sustainability index developed by Christen (1995) is incomplete as it only incorporates the financial indicators for measuring sustainability.

Financial sustainability and outreach have not been jointly considered in order to measure the sustainability of MFI except in a study by Bhanot *et al*. (2015). Bhanot *et al*. (2015) developed a sustainability index for Microfinance institutions in India. They measured financial sustainability by using operational self-sufficiency (which is only one dimension of financial sustainability) and outreach by using depth and breadth of outreach. However, the index does not include the important financial indicator of FSS which is critical as it determines the going concern of MFI (CGAP 2003; Morduch 2000).

Therefore, this study proposes the sustainability index to determine the overall sustainability level of MFIs. The need for sustainability index arises, as Bebbington, Brown, & Frame (2007) stated, to develop a tool and identify the indicators responsible for unsustainable organizations. Saltelli (2007) suggests that it is often easier to interpret an index (comprising of multiple indicators) than to study independently and analyze trends across separate indicators. Composite indicators formed by accumulating individual indicators into a single index, are better equipped to measure multidimensional concepts (such as sustainability) which otherwise cannot be measured by a single indicator (Nardo *et al*., 2005). Furthermore, Ness *et al*., (2007) recognize that use of the index assists institutions to identify better the necessary actions required for sustainability of the organization. Thus, decision making in any institutions is dependent on its sustainability level (Salvado *et al.,* 2015).

Microfinance institutions are developed to provide the funds by reaching the poorest clients and by reaching a maximum number of the clients. Simultaneously, MFIs financial sustainability needs to be focused in the long run because if MFIs are unable to continue their operations, in the long term, the whole system for MFIs will collapse. Therefore, the study concludes that both financial sustainability and outreach should be used in measuring MFIs sustainability. Financial sustainability is measured by using FSS and OSS, and outreach is measured by using depth of outreach (DO) and breadth of outreach (BO). The measurement for breadth and depth of outreach as employed in various studies will be based on the number of active borrowers (NAB) and average loan balance per borrower (ALPB) (Daher, & Le Saout, 2015; Kaur, 2014; Janda, & Turbat, 2013; Kar, 2013; Louis, & Baesens, 2013; Nwachukwu, 2014).

Furthermore, in previous studies including Rai and Rai (2012) and Bhanot *et al*., (2015) sustainability index were developed by assigning weights to the indicators of sustainability. Rai, and Rai (2012) have assigned weights by analyzing the importance of indicators used by different microfinance research agencies worldwide. A multiple regression equation was used as following;

$$Y = \alpha i+\beta 1\ X1it+\beta 2\ X2it+\beta 3\ X3it+\beta 4\ X4it+\beta 5\ X5it+\beta 6\ X6it+\beta 7\ X7it+\beta 8X8it+\varepsilon i \quad (4)$$

The study finds the significant indicators by this multiple linear regression model and assign weights and appropriate scaling to develop financial sustainability index (Rai & Rai 2012).

Similarly, Bhanot *et al*., (2015) used two different methods and determined two separate sustainability scores. For their study, the three individual indicators serve as multiple decision criteria. While OSS ratios are in percent terms, ALPB and NAB were absolute figures, and so were transformed using the natural logarithm function. TOPSIS, a commonly used MCDM technique was used to combine the scores on individual indicators (criteria) to obtain a composite sustainability score. In his study, firstly, iteration was done by giving equal weights (0.333) to all three indicators. In the second iteration, the indicators were ranked in their order of importance and assigned differential weights. OSS was ranked first (0.5), average loan balance was ranked second (0.333) and no. of active borrowers ranked third (0.1666).

Another important method for assigning weights is through Principal component analysis. Principal components determined by factor analysis is a technique to examine the similarities in a data series (Asteriou & Price, 2001). Furthermore, it provides a means for identification of common factors which are unobserved (sustainability in this case). In this technique, a combination of the linearly independent variables explains the observed variable. According to Asteriou and Price (2001), the objective of the study is to develop a mix of technical variables out of the initially available variables. The loadings for the variables are chosen to satisfy the following conditions of constructed principal components: (i) the primary components are not correlated, (ii) the first principal component captivates the maximum proportion out of the total variation for the group of available variables, the second component absorbs the maximum proportion out of the remaining variation in the group (after considering the variation captivated by the first principal component), and so on.

6. SUMMARY OF FINDINGS AND RECOMMENDATIONS

The above studies clearly highlight that measurement for sustainability of MFI is still an unresolved issue. Review of previous studies shows that sustainability of MFI, a physical parameter, comprises of attaining both financial sustainability and outreach. Previous studies and indices are consisting of measuring sustainability by using financial indicators and outreach separately. Since MFIs have a dual mission of achieving both financial sustainability and outreach simultaneously, therefore, financial self-sufficiency, operational self-sufficiency, depth

and breadth of outreach are the four indicators which determine the overall sustainability of MFIs. However, no such studies use all these indicators together to measure the sustainability of MFIs.

For future research, this study proposes to develop a comprehensive sustainability index comprising of FSS, OSS, DO and BO to determine the overall sustainability score of MFIs. Furthermore, this study proposes Principal component analysis used by Asteriou and Price (2001) to assign the weights to all the indicators in developing a sustainability index for MFIs.

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