Journal of Islamic Finance, Special Issue Vol.10 No. 1 (2021) 011 – 018
IIUM Institute of Islamic Banking and Finance
ISSN 2289-2117 (O) / 2289-2109 (P)

GREEN MICROFINANCE PROMOTING SUSTAINABLE DEVELOPMENT GOALS (SDGs) IN BANGLADESH

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ABSTRACT

Green microfinance policy encourages Microfinance Institutions (MFIs) to provide green microfinance to promote environmental-friendly for substantial financial development in SDGs. This paper examines the relation of profitability with green microfinancing on MFIs in Bangladesh. This paper aims to observe microfinance and Sustainable Development Goals (SDGs) for green microfinance development. The finding suggests that the significant aspects of green microfinancing are very much consistent with SDGs. The paper also investigates how far the MFIs in Bangladesh have been adopting green microfinancing to measure the future of green microfinancing and SDGs for Bangladesh. Among the first few to critically examine green microfinance from the perspectives of MFIs, this study is thought to be beneficial for the organizations and policymakers in the effort to evaluate the function and contribution of MFIs in addressing the primary environmental issues in Bangladesh. Moreover, through a meticulous evaluation of the adherence to the existing green microfinance policy, this research can be expected to become one of the blueprints to encourage green MFIs in Bangladesh.

Keywords: *Green Microfinance, Microfinance Institutions, Sustainable Development Goals (SDGs), Economic Development and Bangladesh,*

1. Introduction

Green Microfinance Institutions (GMFIs) is an observable fact that brings together both the entire world of finance and business with ecologically pleasant behaviour (Julia et al., 2018; Khan, 2013). GMFIs have substantially contributed to the transition to resource-efficient and low carbon organizations (Forcella et al., 2018; Huybrechs et al., 2019). MFIs can affect manufacturing, business, production, and additional financial activities through their economic activities by keeping an exclusive placement in a financing program. Moreover, MFIs are currently entirely issued about clean energy, sanitation and water effectiveness and waste reduction (Rashid et al., 2018). Green friendly MFIs or ecologically responsible MFIs affect the socially responsible conduct of other business while enhancing their standard (Sachs et al., 2019). Microcredit Regulatory Authority (MRA) is also concerned about the national environmental situation, protects environmental dilapidation, and assures eco-friendly MFIs procedures. It provides extensive policy recommendations for green MFIs (Jaiyeoba et al., 2018; Mia et al., 2019).

Green microfinancing, which is comparatively a new development in the microfinance industry, is initially based on conventional financing. The primary issue of green microfinance is sustainability which is also an essential function of Islamic financing and agriculturally structured finance (Julia, 2016; Sachs et al., 2019). MRA circular of policy and guidelines on green microfinance is growing supply-side pressure for the loan or financing. On the other hand, the people of Bangladesh desire sustainable development goals (SDGs) and Islamic product to protect themselves both in this world and hereafter from natural disaster and hellfire (Alamgir et al., 2018; Rashid et al., 2018; Tunisan, 2015). Thus, to bridge this gap of requirement and source of financing, this paper desires to represent the current position of green microfinance in Bangladesh in providing green products and show the relationship between sustainability of MFIs with green financing as a measure of sustainability assessment of MFIs. However, the ultimate purpose of the paper is to describe that the MFIs of Bangladesh play a significant role in SDGs as guidelines of green financing as the general activities of green MFIs. Based on exploratory research, this paper will assist as a system to the policymakers on the benefit of green microfinance as the responsible MFIs. It also details out measures on how to revisit the transformation of the financial markets from microfinance to green microfinance. One of the fundamental reasons for this research is to assess the SDGs of green microfinancing significantly and examine the better function that MFIs can play in green microfinancing in Bangladesh (Julia & Kassim, 2016; Nugroho et al., 2017; Tunisan, 2015).

Date of Submission : 30 September 2020
Date of Revision : 12 November 2020
Date of Acceptance : 19 March 2021
Date of Publication: : 30 April 2021

Environmental sustainability is a new issue, which requires the most excellent strategies to reduce the environmental impacts caused by the products and services offered. Generally, "Green microfinance" refers to the exertions of the MFIs sector through justifying their techniques, policy, decisions and activities relevant to MFIs program, business and in-house functional activities to retain the environment green and to lessen greenhouse effects (Allet & Hudon, 2013). This paper desires to emphasize the current performances of MFIs in offering green microfinancing as well as to examine the contribution of MFIs to SDGs through case study and to evaluate the model of financing, especially on green services and products. The objective of the paper is to establish the fact that MFIs can play a more significant function in the SDGs of the economy through the effective implementation of green microfinance.

This paper is organized as follows. The introduction section covers the background and purpose of the research, problem statement, research objectives and significance of the study. The second section is a literature review that discusses MFIs and green microfinance, sustainable development goals (SDGs), which also describes the green microfinancing policy and guideline in Bangladesh. Section three represents the methodology and data that are being used to get the results of the research. Section four presents the findings of the study and discussion and analyses the green performance of MFIs in Bangladesh. The last section concludes the research and includes recommendations and thoughts on enhancing the green microfinance practices in Bangladesh.

2. Literature Review

2.1 Definitions of Microfinance and Green Microfinance

Microfinance is a program that involves serving the most impoverished communities in any region or even country by providing them with soft loans to develop and maintain businesses (Ahmed & Khan, 2016; Roy & Mohanty, 2020). Green microfinance is the same type of program. The difference is that soft loans are provided to individuals or groups whose program supports eco-friendly green and social growth, develops green tasks and progressive eco-solutions to things that are destroying and polluting the world (Boubacar, 2018; Nair & Njolomole, 2020; Nugroho et al., 2017).

Nowadays, there is no accurate and generally acceptable description of green microfinancing as no attempt has been made to define green microfinancing concretely. However, the definition that has been proposed varies significantly. This description also clarifies the locations of green investments-climate switch adaptation, green energies, power effectiveness and other climate change minimization, i.e. reforestations (Julia et al., 2018; Sachs et al., 2019). Financial program elements have been responded to that offer green opportunities, such as green climate funds or financial instruments for green opportunities (e.g. green bonds and organized green funds). This also includes their particular laws, financial and institutional structure conditions (Archer & Jones-Christensen, 2011; Sachs et al., 2019).

Usman et al. (2016) state that it is essential to mitigate the credit risk, legal risk, security risk and reputational risk in the MFIs industry. Green financing denotes practices and techniques that assist MFIs in ecologically, financially, and socially responsible. It indicates that to reduce external carbon emissions and internal carbon impact, MFIs should carry out their procedure in a suitable way and in appropriate places (Iqbal et al., 2019; Tunisan, 2015). To encourage lessening external carbon emission, MFIs should emphasize financing the technologies and projects that are environmentally helpful.

This green microloan service follows the environmental mantra of recycling, refining and reusing resources (Julia et al., 2018). Green microfinance is not harmful to the atmosphere; instead, they speed up green financial and green development that is people-centred, emphasizes on clean water, clean energy, sector and facilities, climate activity existence underwater and life on land, handle the problem of poverty and reduces waste in the atmosphere (Julia et al., 2018; Sachs et al., 2019). It looks for revenue and appeals to environmental stability within businesses, resources, the atmosphere, and the community. According to Julia and Kassim (2016), green microfinance can increase marginal people earnings to survive, enhance their quality of lifestyle, and protect the environment. Green MFIs indicates eco-friendly or environment-friendly MFIs to prevent environmental destruction, thus creating a more habitable world. This arrives in several forms. Green MFIs is also an effort by many stakeholders where MFIs strive to work carefully with authorities, NGOs, consumers and business communities to achieve the goal (Rouf, 2012; Huybrechs et al., 2019; Islam, Ali, & Medhekar, 2017;Yunus & Rahman, 2014).

This hypothesis is similar to theories such as the theory of reasoned action, efficiency theory, supply lending theory, credit rationing theory, and Ibn Khaldun theory. Here, it is used to Ibn Khaldun theory. This theory is attributed to the economic component and the effect of green microfinance programs and promoting SDGs. The dimensional influence of the SDGs goals is poverty alleviation, zero hunger, clean water, responsible consumption and product and clime action etc. The theory argued that several factors lead to green microfinance promoting SDGs in Bangladesh. This study proposes the pursuing hypotheses.

H_1: There is a positive effect of green microfinance policy and promoting SDGs in Bangladesh.

2.2 The Importance of Green Microfinance

This degradable waste economic climate can be transformed into a possible environmental economy through five levels of "closed-loop manufacturing, cyclical substitute cost-effective design": reuse of goods, fixing of items, reconditioning and repairing of goods, recycling materials and the manufacturing of living expansion techniques (Juliaet al., 2018; Qian-qian et al., 2015; Rashid et al., 2018; Sachs et al., 2019). However, several of them have built environmental growth programs in their popular activities in addition to their concentration on financial advancement. Of course, the problem is with the reality that MFIs has not yet become green sufficiently. Thus, zero-waste, closed-loop protocols are essential

to environmental protection (Anis & Kassim, 2016; Nabi et al., 2017; Raheem & Meera, 2018). They all talk about that green microfinance can increase marginal people earnings to survive, enhance their quality of lifestyle, are essential components for sustainable growth, lead to the local economy, green development, and sustainable sustenance at the regional and national levels.

Moreover, green social microfinance can play an essential role in obtaining the Sustainable Development Goals (SDGs) to eradicate poverty and promote environmental growth (Iqbal et al., 2019). Companies make products that end up as waste, and taxpayers turn out to be responsible for waste removal and management. Green microfinance institutions (GMFIs) can assist farmers to initiate solutions in the agricultural industry (Allet & Hudon, 2013; Forcella et al., 2018; Nugroho et al., 2017; Shahidullah & Haque, 2015). Every day, vast amounts of waste are created by individual dwellings, restaurants, hospitals, and factories. According to Julia et al. (2016), there are many transformative green systems and relationships perfect for sustainable livelihoods and enhancing quality of life. Sustainable development and green microfinance development, at the micro-level, need to focus on a goal that encompasses financial, social, economic and environmental concerns. This assists in conserving energy, using alternative energy and promotes environmental development. This study proposes the pursuing hypotheses.

H_2: There is a positive effect of green microfinance reporting and promoting on SDGs in Bangladesh.

2.3 Green MFIs Promoting SDGs

The SDGs consist of 17 goals and 169 targets that the member states of the United Nations have decided to use to frame or guide their growth agendas and political policies over the next 15 years (around 2030) to transform the planet (Qian-qian et al., 2015; Rashid et al., 2018; Weber, 2017). The 17 Goals are constructed based on the Millennium Development Goals (MDGs) and cover areas, for example, poverty reduction, clean water and sanitation, clean energy, life below water, life on land, improved health, quality education and training, peace and justice, sustainable consumption, financial inequality, among other priorities (Usman et al., 2016).

Green microfinancing was formally only available in the year 2010. In earlier days, green MFI is practised in two ways - in-house green microfinancing and business financing. In-house green includes keeping clean and hygienic atmosphere, green building, reforestation, installing solar power on the rooftop of MFIs and making use of high mileage automobiles, making use of the webcam for video conferencing rather than physical meetings, waste management, reducing sound pollution, online MFIs, online statements, emailing etc.

According to Julia (2016), encouraging investment expense in Biogas Plants, Renewable Energy Plants, Effluent Treatment Plants (ETP), Projects getting ETPs, Bio-fertilizer Plants, etc., are categorized as financing in green business. Green MFIs commences optimistic measures to protect the atmosphere and also to discourse green building, reforestation, installing solar power on the rooftop of MFIs , waste management, reducing sound pollution, environment change issues while supporting alongside efficient usage of renewable, non-renewable, human, and organic sources (Shahidullah & Haque, 2015). According to Julia (2016), Green MFIs begin with the purpose of protecting the atmosphere since before granting any financing to any task MFIs examine the eco-friendliness of the projects before granting the mortgage or funding. Only when all the environmental protection standards are adopted the company will be given a loan (Forcella & Hudon, 2016; Julia, 2016; Sachs et al., 2019). MFIs can practice and initiate Green MFIs for ecological advancement. Already various initiatives have been commenced to ensure access to financial services for several activities such as trade finance; digitalization of the financial industry; channelling liquidity into significant and offer augmenting investments which include agriculture, SMEs, Green Banking and CSR activities; to fulfil the targeted vision of SDGs 2030. This study proposes the pursuing hypotheses.

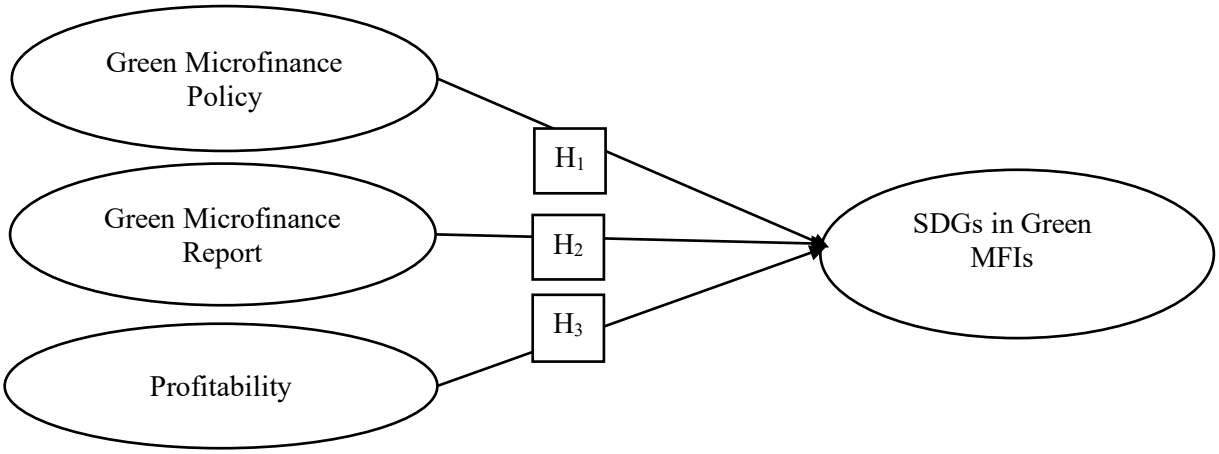
H_3: There is a positive effect of green microfinance profitability and promoting on SDGs in Bangladesh.

3. Methodology

The analysis adopts a quantitative research approach with a descriptive research design. A quantitative research approach is advisable to make use of as it can help verify the precision of the data (Josse & Husson, 2016). This study used a survey methodology to accomplish the objectives of the study. Survey data were collected using a structured questionnaire as an instrument to evaluate the level of green MFLs. The descriptive and inferential analysis is used to examine the extent of awareness regarding green microfinance promoting sustainable development goals in Bangladesh. A random sampling technique was used for this study. Data collected from the final field study was captured into SPSS 22 and analyzed to produce the required statistical results (Maione & Barbosa, 2019). Data analyses have been conducted using SPSS Statistical software and Pearson Correlation technique; One-way ANOVA statistical methods is used. The surveys analyzed statistically and therefore the data analysis is inferential in nature**.**

The self-administered questionnaire was used to collect data from 387 participants without the help of the researcher. Question items had been adapted from the GMFIs policy, green microfinance report, profitability and SDGs in green MFIs (Black & Babin, 2019). Measuring tools exhibited high levels of reliability and validity and have been trusted in the literature to measure financial management behavior. Likert scale questions which range from "1- strongly disagree" to "5 - strongly agree" were used to measure Green MFIs (Hair et al., 2015; Merkle et al., 2020) .They were considered predicated on the indication that they are possible determinants of green MFIs behavior. However, they have not been examined empirically in the context of rural green microfinance business (Allet & Hudon, 2013). The convenience and random sampling methods were used to identify the participants involved in the study. Cronbach's alpha was used as a way of measuring reliability, descriptive statistics and factor analysis (Joe F. Hair et al., 2015).

Demographic information provides data regarding research participants and is necessary for the determination of whether the individuals in a particular study representative sample of the target population for generalization purposes are green microfinance policy, green microfinance report and profitability are independent variables because they cannot be manipulated and will affect the outcome of SDGs among green MFIs in Bangladesh. Research design reflects the analysis process's standards and outlines to assess the hypotheses and accomplish the analysis objectives.



4. Data Analysis And Discussion

It was mentioned earlier that a total of 365 responses was collected from the distributed questionnaires representing 98.8%. The sample of the respondents were taken from the microfinance stakeholders, client and officers. These classifications are discussed in the subsequent sections. Out of the responses, 237 respondents (64.9%) were male, and 128 respondents (35.1%) were female. 136 (37.3%) of the respondents ranging between the age of 40-49 years old, 124 (34 %) were 50 years above, and 85 of them age is 30-39 years old = 23.3% indicating that most of these females are 40 years above old.

Table 4.1 Measures of Constructs and Descriptive Statistics

Green Microfinance policy	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
GMP1_1.1	365	1.00	5.00	4.5534	.62943	-1.698	5.020
GMP2_1.2	364	1.00	5.00	4.1401	.91190	-1.245	1.480
GMP3_1.3	364	1.00	5.00	4.4121	.60345	-.868	2.179
GMP4_1.4	365	2.00	5.00	4.3096	.73383	-1.062	1.280
GMP5_1.5	365	2.00	5.00	4.5726	.56288	-1.172	1.931
Green Microfinance Report							
GMR1 2.1	362	1.00	5.00	3.9420	.78733	-.788	.819
GMR2_2.2	365	1.00	5.00	4.3753	.72547	-1.230	1.987
GMR3_2.3	364	1.00	5.00	4.1181	.88439	-1.146	1.335
GMR4_2.4	365	1.00	5.00	4.4000	.83469	-1.576	2.372
GMR5_2.5	364	1.00	5.00	4.0962	.77785	-.910	1.154
Profitability							
PR1_3.1	363	2.00	5.00	4.3664	.58591	-.379	-.199
PR2_3.2	364	3.00	5.00	4.6016	.51222	-.663	-.995
PR3_3.3	364	2.00	5.00	4.4203	.55220	-.323	-.276
PR4_3.4	364	1.00	5.00	4.0577	.79216	-.905	1.057
PR5_3.5	364	2.00	5.00	4.4725	.56706	-.666	.507
SDGs in Green MFIs							
SDG1_4.1	364	1.00	5.00	4.5220	.60033	-1.314	3.431
SDG2_4.2	364	2.00	5.00	4.4808	.57703	-.833	1.144
SDG3_4.3	364	2.00	5.00	4.4148	.57582	-.534	.362
SDG4_4.4	364	2.00	5.00	4.5000	.58210	-.927	1.238
SDG5_4.5	364	2.00	5.00	4.4890	.58200	-.800	.592
Valid N (listwise)	359						

Note. N=365 for all items. All items were measured using a 5-point Likert scale. SD is the standard deviation

While the inspection of skewness and kurtosis values is necessary, it is recommended that it is more appropriate for larger sample sizes (Joe F. Hair et al., 2015; Merkle et al., 2020). Since this study only comprised of 365 samples, the size is considered as a large sample. The reliability of a measure is established by testing for both consistency and

stability. Cronbach's alpha is computed in terms of the average intercorrelations among the items measuring the concept. Cronbach's alpha reliability coefficient indicates how well the items in a set are positively correlated to one another. The closer Cronbach's alpha is to 1, the higher the internal consistency reliability (Hair et al., 2015). Table 2 provides the standardized loading, Cronbach's alpha, composite reliability, and average variance extraction for the study variables. This study can conclude that the variables were reliable measures. The composite reliability values also ranged from 0.813-0.907. Interpreted like a Cronbach's alpha for internal consistency reliability estimate, composite reliability of 0.70 and more significant is considered acceptable (Black & Babin, 2019; Hair et al., 2015). Therefore, this study concluded that the measurements were reliable measures. Before conducting exploratory factor analysis EFA, the sample adequacy has been tested using Kaiser-Meyer- Olkin (KMO). Likewise, Bartlett's Test of Sphericity has also been conducted to ensure a sufficient correlation between the variables. As shown in Table 2, the results of the KMO test is 0.913 and Bartlett's test was significant (p <.000). These results indicate that the adequacy of the sample for conducting a factor analysis and the distinction of the latent variables from each other (Hair & Fávero, 2019).

Table 4.2 Factor Analysis Results of Green MFIs promoting SDGs.

Rotated Component Matrix				
	Component			
	1	2	3	4
GMP1_1.1 MFIs developed strategy to reuse, recycle of materials and equipment's, source reduction and waste minimization	.895			
GMP2_1.2 MFIs has green branch equipped with green instruments	.925			
GMP3_1.3 MFIs has created green strategic planning and disclose it	.876			
GMP4_1.4 MFIs is following environmental risk management manual or guidelines which is created by itself	.901			
GMP5_1.5 MFIs has formulated a sector-wise strategy to protect the environment such as Agro businesses, Fisheries, Textile and apparels, renewable energy etc.	.886			
GMR1_2.1 MFIs invented and introduced green products in the industry		.929		
GMR2_2.2 MFIs has "Green office guide" as a part of in-house environment management initiatives		.894		
GMR3_2.3 MFIs announce a green report on an annual basis		.914		
GMR4_2.4 MFIs has already initiated a rigorous program to educate clients about the efficient use of resources.		.909		
GMR5 2.5 MFIs regularly publishes green reports showing past performance, current activities and future initiatives.		.857		
PR1_3.1 Green microfinancing is contributing to the overall profitability of MFIs			.911	
PR2_3.2 Is it easy to set up a green branch and very timely			.901	
PR3_3.3 Green microfinancing role to the profitability of MFIs is very minimum			.895	
PR4_3.4 Setting up green branches or unit is expensive			.873	
PR5_3.5 Green initiatives expenses can be covered from the CSR fund of the MFIs.			.862	
SDG1_4.1 Operations of SDGs is value-based, so is contributing more to the sustainable development of the economy.				.875
SDG2_4.2 Green microfinance care for people, environment, society and humankind, which is the fundamental concept of SDGs too.				.835
SDG3_4.3 SDGs enough measure is taken to safe energy in house activities				.814
SDG4_4.4 SDGs are based on the concept of promoting acceptable practices and values; it is the right platform to boost green microfinancing.				.819
SDG5_4.5 SDGs is practised to train employees, to create awareness among customer about green MFIs				.798
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.915	
Bartlett's Test of Sphericity Approx. Chi-Square			3279.204	

	df	300
	Sig.	.000
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.813	.907	20

In terms of factor analysis for green microfinance, four factors with Eigenvalues more significant than one were extracted. Factor 1 was labelled green microfinance policy, factor 2 was considered green microfinance reporting, factor 3 was marked profitability and factor 4 was described as sustainable development goals (SDGs). The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is .915, indicating high reliability of the scales (Hair & Fávero, 2019). More importantly, Bartlett's Test of Sphericity is .001; it is also a significant factor analysis. It can be deduced that all the variables sufficiently measured the underlying green microfinance promoting SDGs in Bangladesh. The findings from ANOVA showed that they significantly differ in their perception of being financially included based on people. The *p*-value for all constructs was significant at *p* W 0.05 as stipulated by (Merkle et al., 2020). The results of the ANOVA are indicated in Table 3.

Table 4. 3 ANOVA with Tukey's Test for Nonadditivity

			Sum of Squares	df	Mean Square	F	Sig
Between People			970.768	237	4.854		
Within People	Between Items		756.967	128	33.378	34.721	.000
	Residual	Nonadditivity	33.765[a]	1	26.860	27.882	.000
		Balance	8276.773	8786	.942		
		Total	7856.336	8787	.946		
	Total		8896.596	8816	1.019		
Total			110245.546	9119	1.147		
Grand mean = 4.2486							
a. Tukey's estimate of power to which observations must be raised to achieve additivity = 3.365.							

The findings indicated that ANOVA result significantly influences financial literacy. Which showed that interventions to improve Sustainable development goals explain the grand mean is 4.85 of the variances in green microfinance. Moreover, this study shows that green microfinance enhances a range of behaviours, such as green microfinance policy in the sector, investments, financial position, and financial practices, which are critical for poverty alleviation in developing countries with *H1* derived under study. It also acts as environmental agents, which can be overcome by poverty, inculcates in *H2* green MFIs report the desire to plan their finances to change their performance to follow through with their saving and borrowing plans. Furthermore, the results revealed that there is a significant relationship between green microfinance policy and profitability among sustainable development goals. It is in line with *H3*, which stated that the green microfinance report positively affects sustainable development goals. Green microfinance policy contributes to poverty alleviation and the environment and this may cause a positive effect in their action towards achieving SDGs.

On the contrary, the results indicated that there is a significant and positive effect of green microfinance report on SDGs. Specifically, profitability as an aspect of sustainable development goals promotes green microfinance in Bangladesh Besides, consumption and use of green microfinance by SDGs in developing countries are directly linked to green MFIs policy.

5. Conclusion

The current study adds to the existing literature on SDGs by indicating that green MFIs significantly affect the financial inclusion of green business entrepreneur in Bangladesh. The study revealed that green microfinance policy impacts on the green financing of MFIs of Bangladesh. However, the overall findings of the research paper are the statistical analysis that has proven that there is a positive correlation among green microfinance policy, green microfinance report and profitability of MFIs. From the analysis, a conclusion can drawn that not a single MFIs meets all the requirements of each section of green policy; different MFIs is doing well in different section. After an in-depth analysis of the green microfinancing initiatives of Bangladesh MFIs, the paper therefore provides few suggestions to accelerate the pace of green growth throughout the economy and it can be done in three ways; Firstly, enhancing the regulatory and supervisory pressure of government. Secondly,-financial institutions covering comprehensively all MFIs through their financing and educating the people about the significant benefit of this financing. Thirdly, educating individuals to be conservative in everyday

consumption of utilities as everyone's small amount of energy saving can have a significant impact on the overall society and economy.

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