

COVID-19 Pandemic: Microfinance and Social Sustainability of Grameen Bank Borrowers in South-West Bangladesh

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Abstract

As important as social sustainability is to the sustainable development agenda, there is a lack of research to define and operationalise the concept. This research aims to add to the existing knowledge by developing a comprehensive scale for evaluating social sustainability and microfinance at the vulnerable level. We argue that a multidimensional concept of social sustainability incorporates equity, diversity, social cohesion, quality of life, and democracy and governance. An incomplete picture of social sustainability may result if these dimensions are ignored. Factor analysis examines the scale's validity, reliability, and dimensionality. Using microfinance as a case study, we demonstrate how the social sustainability scale can be used in practice. Women microfinance users in rural and coastal areas in the Satkhira District of Bangladesh's southwest were surveyed for this paper using data from a questionnaire survey that included 223 respondents from rural and coastal regions (Shyamnagar and Kaliganj Upazilas). According to this new research, improved microfinance positively and significantly impacts various aspects of social sustainability and overall social sustainability.

Keywords COVID-19 · Microfinance · Grameen bank borrowers · Social sustainability · Bangladesh

1. Introduction

Among policymakers, practitioners, researchers, and the general public, pursuing “sustainable development” has become everyday discourse and practice. The

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concept of “sustainability” and how it might be attained is a hotly debated topic. Hence, a widely used term for low-income financial services provided in various banking and financial service methods, including microcredit, micro-insurance, micro-savings, and money transfers, is “Microfinance.” (*van Rooyen et al., 2012*). It is now considered an excellent tool for international development, particularly in alleviating poverty (Yunus, 1999). It affects sustainable development directly and indirectly (*Busch et al., 2016*). However, there are very few conceptual arguments that exist.

On the other hand, Microfinance programs can potentially achieve equitable and sustainable development (*Rahman, 1999; Stevens and Morris, 2001*). For these lucrative specialities and in consideration of their importance, microfinance has been targeted as research content for the last few decades.

In the world’s largest banking market, *Microfinance* is considered a high-growth industry serving customers (*Mersland et al., 2013*). Microfinance offers financial services to poor and low-income customers not helped by the conventional banking sector for the last three decades. For instance, in the present world, 62% of the adult population have a bank account, 51% in 2011. At that time, 2.5 billion adults had no bank account, and at present, the number of people with no bank accounts adult is 2 billion. The increase in bank account holders has been 20% since 2011 (*Kunt et al., 2015*).

Sustainable development lies in financial, environmental quality, and social development (*Rogers, P. P et al., 2005*). Economic Sustainability refers to sufficient revenue to cover the total expenses (*Mia, M. A., Nasrin, S., & Cheng, Z. 2016*). However, in some cases, the microfinance specialists believe that the microfinance institutions are giving more importance to financial sustainability. The main aim (social development) of microfinance is de-emphasised (*Louis et al., 2013*). This paper seeks to contribute in this regard.

However, the primary objective of microfinance was related to economics, but later it shifted to the social and after-development perspective (Copestake, J. 2007). However, microfinance specialists have disagreed with these objectives recently and emphasised “environmental” as the third objective (Hall et al., 2008). Consequently, “Green Microfinance” comes forth, which always tries to meet these objectives by ensuring environmentally (Green) friendly products (loans and services) and technical assistance to the poor, low and moderate-income people. Reducing poverty and financial exclusion “Green Microfinance” immensely affects environmental protection, energy efficiency, and slowing down environmental degradation. Moreover, because it is observed that low-income customers of microfinance have a strong dependency on these natural resources, which results in the depletion of natural resources, by availing of the “Green Microfinance,” they can gradually fill up the shortage and sustain their businesses. In this way, microfinance ensures the well-being of the environment, people, and humanity (*Rammaswamy A., Krishnamorty A., 2016*).

However, for Microfinance, there is still an ongoing discussion and debate between the recent financial orientation and better financial access for the root level people termed as a social mechanism (Atahau et al., 2020). On the other hand, by extending financial services to poor people, microfinance has also been an effective tool for developing the grassroots level for several years (Hudak, 2012). However, it is observed that the higher authorities of microfinance institutions are socially driven in most cases, whereas almost all the officers supposed to provide credit are financially oriented (Serrano-Cinca et al., 2015). Such shifting of motive from social to financial orientation is broadly termed the mission drift (Mia and Lee, 2017). Due to massive loan funding from traditional banks and financial institutions, microfinance institutions focus more on commercial objectives than serving the poor, leading to this mission drift. So, is needed to find empirical studies between microfinance and social sustainability to address the evidence gap. This paper also seeks to contribute in this regard.

Since the 1980s, Social Sustainability has been an overlooked aspect of three-pillar sustainable development that has discoursed economic, environmental, and social Sustainability (Shirazi and Keivani, 2018). However, in recent years, the concept, area, and ideas of social sustainability are least defined and ambiguous. Unfortunately, though, the development of the concept and definition of social sustainability was sidestepped from time to time. Still, the theories of social sustainability have been outlined as “added-on” for the development and measurement of environmental (natural resources) and economic sustainability (the basic human needs) (Magis and Shinn, 2009). However, after reviewing social sustainability literature, researchers have discovered two significant shortcomings: the theoretical deficiencies in considering the areas and the definition of the social sustainability concept and another deficiency in operationalisation and integration into planning projects (Vallance et al., 2011).

This article seeks to determine the relationship between social sustainability (equity, diversity, social cohesion, quality of life, democracy and governance) and microfinance among rural Bangladesh microfinance customers. The data was collected during the Covid period by obeying the Covid safety rules from the Grameen Bank (Noble prize-winning microfinance providing institution) customer in Satkhira, situated in the southwest part of Bangladesh. This area is a good location and a research field to examine the linkages between the variables. Bangladesh has a pulsating microfinance field and is the most climate-changing country worldwide (Fenton et al., 2017). *The country* suffers from multiple environmental and natural climate hazards, mainly flooding, affecting many countries (MoEF, 2008).

2. Literature Review and Justification of the Study

Poor people and communities do not have enough food, clothing, shelter, and medical care to maintain a basic level of well-being (Kanellopoulos, 2011). To alleviate poverty, microfinance is expected to help those in need by increasing their

standard of living. There is a wide range of views on whether or not microfinance interventions have been successful or unsuccessful in promoting sustainable growth among the poor. According to the literature, a substantial increase in microfinance services effectively alleviates poverty and empowers the poor (Dunn, 2002; Cohen, 2002). The popular belief that the poor are passive recipients of financial services is a misconception in microfinance. The idea that poor people are “unbankable” was also debunked by this study (Woller, 2002). Microfinance has a long history of success, but there have been reports of cases where customers questioned the sustainability of its programs. Researchers have discovered several reasons these interventions have failed to achieve long-term success. These findings are based on research conducted in various countries. Among the issues raised were those money laundering, gender inequality, interest rates, and inter-village strife (Hulme, 2007, Haasan 2002, Snow and Buss, 2001, Floro and Dymiski, 2000). Another reason microfinance has failed to achieve its goals is that the product has not been blended to consider local needs and preferences (glocal approach) (Rugimbana et al., 2005). Consumers have been accused of misusing funds intended for microfinance companies, leading to underperformance. It necessitates further research that could lead to a successful business model. Given the stake size, successful and unsuccessful strategies must be identified. This way, the best designs could be adopted and the worst ones eliminated. This study will examine the effectiveness of the formal financial sector’s strategies for sustainable growth of bottom-of-the-pyramid customers in Bangladesh’s rural microfinance programs.

2.1 Alleviation of Poverty and Improving Lifestyle Through Microfinance

Over the past two decades, microfinance has progressed from being a charitable activity to an effective tool for poverty alleviation (Carlin, 2006). It has also developed into profitable business activity, with an average repayment rate of more than 90 per cent, demonstrating its success. Microfinance has evolved from a “novel” concept to a concept that has won the Nobel Peace Prize for its contribution to alleviating poverty (Rogaly, 1996; Carlin, 2006). In part because of microfinance’s low default rates and its emphasis on women’s empowerment, it has given the impression that poverty in low-income countries can be gradually eliminated by assisting customers at the bottom of the economic pyramid to obtain small loans for business purposes (Develtere and Huybrechts, 2005). Contrary to popular belief, some research has shown that microfinance hurts poverty; the burden of debt placed on low-income families has resulted in them becoming poorer due to the debt (Hulme and Mosley, 1996; Hulme, 2007). In most studies, microfinance has a negligible effect on economic development (Dichter, 1996).

Well-established financial institutions are pursuing microfinance as part of their Corporate Social Responsibility (CSR) efforts. Their firm belief will result in long-term benefits for both consumers and service providers. Access to formal

financial services allows consumers to borrow money to start their businesses and break out of poverty, which is a significant benefit. By pursuing the strategies mentioned above, these financial institutions claim that people will be more likely to adhere to corporate values and that their initiatives will better meet the organisation's and its stakeholders' needs. It is critical for a financial institution to maintain credibility and long-term viability to remain competitive in today's economy. Researchers, on the other hand, have expressed scepticism about microfinance initiatives.

2.2 Criticism on Microfinance

2.2.1 The Absence of Sustainable Practices

Microfinance programs face increasing criticism as their popularity rises. The critics agree that microfinance institutions can and should become financially viable. – The critics The effectiveness of microfinance as an instrument for alleviating poverty and ensuring long-term viability has been questioned in numerous locales. Given that a wide range of institutions, ranging from the richest to the poorest, engage in microfinance lending, it begs whether lessons learned from one context can be applied to another. Furthermore, because they are frequently heavily subsidised, most micro-lending programs heavily rely on donations (Adams and Von Pischke, 1984, Morduch, 1999). Microfinance programs, even if they focus on the poor, may not be cost-effective or even worth supporting to transfer resources.

2.2.2 An Absence of Customer-centred Strategies

Furthermore, the micro-enterprises that these programs support can only grow at such a rapid pace that they have little impact on the poor. According to their critics, Microfinance programs cause the poor to become economically dependent on their program (Bouman et al., 1989). Some microfinance loans may not reach the poorest of the poor due to credit rationing in microfinance programs, including inequalities in benefits and loan sizes and restricted access to services (Baydas et al., 1997, Joseph, 1993). As a result, microfinance institutions (MFIs) have been accused of failing to target the appropriate customers in some parts of the world. Through the efforts of the microfinance movement, poor households are encouraged to take out loans they may not be able to pay back (Snow and Buss, 2001). According to Gonzalez Vega (1998), many people questioned the goals and expectations of the microcredit summit. While these objectives are commendable in principle, they are flawed in practice because they fail to recognise the difficulties of broadening the financial sector to include the less fortunate.

2.2.3 Social and Economic Problems Created by Microfinance

Some studies have pointed to several social and economic problems in some programs. Some of these are:

- Personal use of money taken from microfinance ventures. (Hume, 2007, Bichanga and Aseyo, 2013);
- High rates of interest (Hassan, 2002);
- Risk of being trapped in a debt-to-debt cycle (Snow and Buss, 2001);
- The vulnerability of households reliant on credit (Floro and Dymiski, 2000);
- There is a possibility of free-riding and conflicts between villagers and men and women (Hassan, 2002).

There appears to be much disagreement about the potential of the microfinance movement based on the results of various studies. An investigation into the matter is necessary. Despite all of the criticisms about microfinance, this sector is growing, particularly in countries like Bangladesh, where most people live below the poverty level. Since microfinance has so many potential customers, testing its effectiveness in a country like Bangladesh is critical given its inconclusive research findings.

2.3 Microfinance Institutions in Bangladesh

The 'Jobra' experiment of Mohammad Yunus and some government-led microfinance institutions emerged in Bangladesh in the early 1970s. Following these initiatives, several MFIs have sprung up in the country to serve the needy. Despite being around since the 1970s, MFIs began to increase in the 1990s and quickly spread across the country. This sector's rapid expansion has also been widely acknowledged around the world. The microfinance industry's rapid expansion necessitates establishing a regulatory framework to ensure its long-term viability. Without regulation, Microfinance Institutions engaged in numerous fraudulent activities against small depositors, leading to operational inefficiency. Weak liquidity management and a lack of transparency and reporting mechanisms also damaged the MFI's reputation.

There has been much discussion about how to regulate microfinance. Scholars worldwide have developed various options, including soft regulation, self-regulation, and prudent regulations (appropriate regulations that can sustainably guide and control microfinance operations). Substantial evidence is that both self-regulation and special regulation failed to achieve the expected growth in the microfinance industry. Sustainable development can be achieved through prudential regulation. Furthermore, it is difficult to attract capital without proper regulation. While adopting prudent regulation, however, developing countries face challenges due to inadequate information and data collection, weak accounting standards and reporting mechanisms, lack of professionalism, and political interference, among other things. 16 PKSF, Bangladesh Bank's Microfinance Research and Reference Unit (MRRU) since the 1990s and later in the 2000s, has supervised, monitored, and provided guidance to NGO-MFIs in the country. Until

2006, regulation was seen as a stumbling block to this sector's growth. On July 16, 2006, the Bangladeshi government finally passed the "Microcredit Regulatory Authority Act, 2006." Under the Act, no MFI can operate without a license from MRA. Only a small number of the 4236 potential microfinance institutions were chosen in 2007 due to the requirement of either having 1,000 borrowers or owing 40 lacs on their loans. [17].

2.4 Microfinance and Social Sustainability

On the other hand, social sustainability factors consist of social equity, diversity, social cohesion, quality of life, and democracy and governance (Fernández-Pérez, V., & Peña-García, A., 2021).

Figure 1: Social factors in the broader social sustainability context



3. Research Design

3.1 Data Collection

We designed a questionnaire named "microfinance and your social experience during Covid 19 periods" for surveying the microfinance customers for this study. This survey's primary purpose is to use the data as the primary data source for evaluating microfinance and social sustainability. We believe it is needed for quality and best research judgments to collect data from the respondents who live in the rural society because the individual's interpretations and values may vary for many factors from individual to individual (Dave, 2011).

To evaluate our question validity measures, we scrutinised our questionnaire's initial version by academic experts with sound knowledge of microfinance and

social sustainability. We checked and corrected our questionnaire based on their review, comments, and suggestions. In addition, before starting our data collection, we conducted a pilot survey among 20 respondents to evaluate our questionnaire's mistakes, clarity of instructions, assessment survey terminology, and response format.

Three hundred questionnaires were distributed among the women microfinance users of the rural and coastal areas of Satkhira District (Shyamnagar and Kaliganj Upazilas) of the southwest part of Bangladesh during the Covid period to maintain Covid safety rules. As a result, we received 235 questionnaires from the respondents that correspond to the 78.33% response rate. In addition, among the questionnaires received, there were 12 questionnaires unusable as missing data, which results in a usable rate of response of 74% (questionnaires).

The location was selected based on questionnaire surveys indicating the factor relation. It was a typical region, subjected to flooding, relief, and assistance supplied by Government and Non-government financial institutions. Data was available and safe, and study participants were a low danger of fatigue. Data is collected to examine the context-specific nature of vulnerability and adjustment thoroughly. Qualitative techniques and extended local existence were needed to acquire the familiarity and confidence of study respondents (Fenton, A., Tallontire, A., & Paavola, J. 2017).

Table1: Response Category Interval

Scale Level	Interval	Answer category
1	1-1.99	Strongly Disagree
2	2-2.99	Moderately Disagree
3	3-3.99	Disagree
4	4-4.99	Neutral
5	5-5.99	Agree
6	6-6.99	Moderately Agree
7	7	Strongly Agree

Source: Author's Calculation

3.2 Methodology

In this study, there are two parts to the data analysis. Social sustainability scale development is the subject of the first section. As recommended in the literature, we followed standard procedures for scale development (e.g., DeVellis, 2016; Hair et al., 2010). EFA and CFA are used in this study section to develop the social sustainability scale and evaluate its validity, reliability, and scale dimensionality. Related figures in the supplementary material depict the scale-development process in greater detail. Applying the proposed social sustainability scale in Bangladesh is the focus of the second part of the data analysis. Multiple regression analysis investigates the relationship between Microfinance and social sustainability.

3.3 Measurements

3.3.1 Measuring social sustainability

After widely reviewing the literature for defining social sustainability, this paper identifies five critical factors: Equity, Diversity, Social Cohesion, Quality of Life, and Democracy and Governance. Each factor is defined in the context of relevant variables, and each variable is reflected on the survey questionnaire. For designing the questions, we have used a 7-point Likert scale. Each respondent's answer to a statement is asked to be listed in one of 7 categories, ranging from strongly disagree (rating of 1) to strongly agree (rating of 7). For social sustainability, each variable is derived from existing literature and earlier surveys (Bacon et al., 2012; Rani, 2012; Smith, 2011).

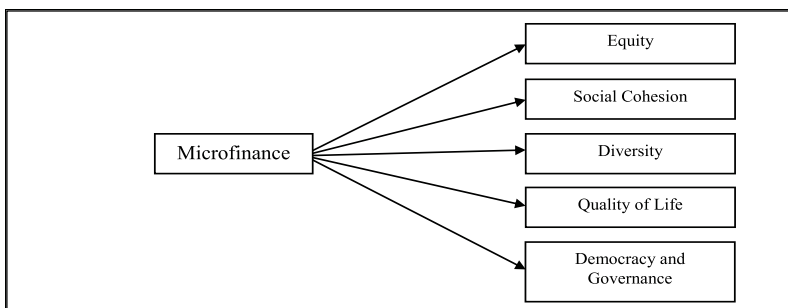
Figure 2: Social Sustainability factors



Source: Authors

3.3.2 Measuring the Sustainability of Microfinance

Figure 3. Conceptual Model



Source: Author's Calculation

There are many factors for determining the contribution of microfinance (Allet and Hudon, 2013). However, especially in the country's countryside regions,

the social, economic, environmental, and demographic factors mainly affect the development of microfinance. Demographic factors consider the local population's age, gender, and occupation (Elsayed and Paton, 2009).

3.3.3 Measuring Sustainability Factors Between Microfinance and Social Sustainability

This paper uses the social variables as social sustainability factors with microfinance depending on the previous literature. Depending on the current findings, the researchers recommend the following hypotheses:

- Hypothesis 1. There is a significant relationship between Microfinance and Social equity.
- Hypothesis 2. There is a significant relationship between Microfinance and diversity.
- Hypothesis 3. There is a significant relationship between Microfinance and Social cohesion.
- Hypothesis 4. There is a significant relationship between Microfinance and the quality of life.
- Hypothesis 5. There is a significant relationship between Microfinance and Social democracy and governance.

Results and Discussions

4.1 Modelling Social Sustainability

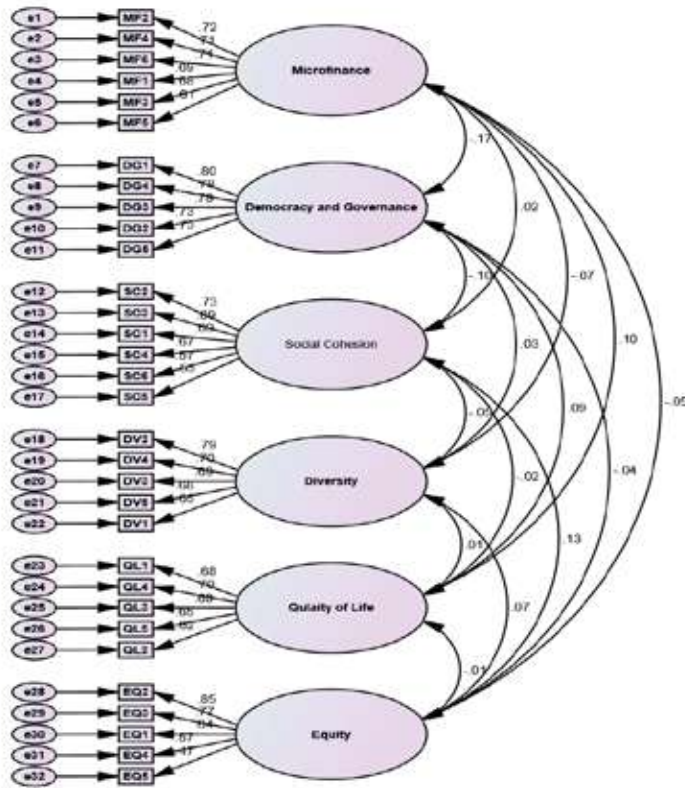
Results of exploratory factor analysis (N=222)

Factors and Items	Factor loading range	Eigenvalues	% Variance explained	Cronbach's alpha
Democracy and Governance (Items: DG1, DG2, DG3, DG4, DG5, DG6)	0.786-0.838	3.780	14.540	0.872
Social Cohesion (Items: SC1, SC 2, DG3, DG4 DG5, DG6)	0.621-0.786	3.165	12.172	0.810
Diversity (Items: DV1, DV2, DV3, DV4, DV5, DV6)	.729-.821	3.068	11.802	0.824
Quality of Life (Items: QL1, QL2, QL3, QL4, QL5)	0.710-0.771	2.770	10.654	0.802
Equity (Items: EQ1, EQ2, EQ3, EQ4, EQ5)	0.624-0.849	2.484	9.555	0.795

Extraction method: principal component analysis; Rotation method: Varimax with Kaiser normalization. KMO=0.736; Bartlett spherical test=2368.685; significance= 0.000.

Source: Author's Estimation

Figure 4: The structural model results.



Source: Author’s Estimation

4.2 Exploratory Factor Analysis (EFA)

For studying the social sustainability factorial structure, an exploratory factor analysis (EFA) is employed to explore the nature and number of the factors allied with the variables that have been observed (Hair et al., 2010). In line with Hair et al. (2010) and DeVellis (2016), we measured the overall dimensions of the social sustainability scale and refined the item pool.

The results of Table 3 show the EFA factor loadings, percentage of variance explained, and factor reliability values (i.e., Cronbach’s alpha values) for the refined scale. When viewed, it can be seen that all of the variables have acceptable loadings, with none having loadings less than 0.5. (Hair et al., 2010). Factor loading illustrates how each variable plays a significant role in the dimension under consideration. For every individual dimension that a particular variable represents, the higher the factor loading for that dimension, the more accurate that variable will be in describing it. When it comes to establishing the reliability of the various dimensions, the results show that Cronbach’s alphas all exceed the

accepted threshold of 0.7, except for the measure of the place, with an alpha of 0.69, which is just above the accepted threshold to be acceptable (Hair et al., 2010).

4.3 Confirmatory Factor Analysis (CFA)

A confirmatory factor analysis (CFA) is done to assess the factorial validity of the Five-dimensional model with 26 variables discovered through an earlier evaluation process known as an extraction fluency analysis. This method is done in AMOS (Arbuckle, 2006). The path diagram of the finalised social sustainability scale measurement scale's factorial structure is depicted in Figure S2 in the online Supplementary Material. Numerous indices of overall model adequacy (fitness-of-fit) indicate that the social sustainability scale fits the data well: CMIN/DF= 1.438, NFI=0.795, CFI=0.926, RMSEA= 0.44, GFI= 0.853, AGFI=827. These Five-dimensional social sustainability measurement scale measurements are within the accepted threshold (Hair et al., 2010), supporting the findings that the scale measurements fit the data very well. All five dimensions have a CR between 0.87 and 0.62, confirming their reliability and consistency, which lie above the 0.60 thresholds (Bagozzi and Yi, 1988). Additional support for a one-dimensional model is given by each variable's large and significant standardised loadings on its intended dimension.

Additionally, to evaluate the validity of the social sustainability scale, we performed convergent, content, and discriminant validity tests. Ensuring content validity, in this case, calls for applying a model that draws on a thorough review of relevant literature (Hair et al., 2010). A comprehensive literature review was employed to construct the social sustainability scale's variables and dimensions. In addition, the pilot test performed before data collection validates the developed scale's content.

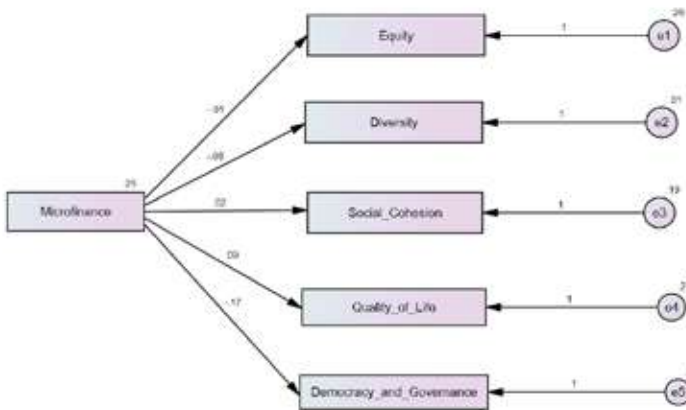
There is convergent validity because each variable's standardised loading has a large and significant effect on the intended dimension. The validity of convergent results is accepted when factor loadings are greater than 0.5 and t coefficients are significant, which is when their values are greater than 1.96 (Hair et al., 2010). The two dimensions are highly correlated in the first two tables, suggesting strong convergent validity. The discriminant validity analysis checks whether two dimensions and their variables can differentiate (Bagozzi and Yi, 1988). Hair et al. (2010) found that discriminant validity, measured as the individual variable factor loadings, was 0.50 or above, indicating better measurement properties than other dimensions in the measurement scale. We also applied the AVE test, first introduced by Bagozzi and Yi (1988). Discriminant validity is confirmed for all the dimensions as AVE's square root is more significant than any other factor's correlation coefficient. Overall, the results show that the model's parameter estimates are strongly associated with the variable loadings (defined by the numbers assigned to each variable in the social sustainability scale), and the five dimensions (the variables themselves) explain over 58.72% of the total variance, indicating a solid model fit.

5. Results Discussion

The Relationship between Microfinance and Social Sustainability: The social sustainability model developed at the previous analysis stage provides valuable inputs for exploring the effects of design quality on social sustainability. Ordinary least squares (OLS) regression modelling is applied for this part of the analysis because it is considered a suitable technique for providing empirical evidence on the nature and direction of the relationship between microfinance and social sustainability. Seven sets of multiple regression analyses were conducted using SPSS (version 26) to investigate the relationship between microfinance and each dimension of overall social sustainability. The possible effects of the personal factors, social equity, diversity, social cohesion, quality of life, and democracy and governance on each social sustainability dimension are also investigated. Descriptive statistics and ordinary least squares regression results are shown in the Table.

Discussion: The Social Sustainability scale, created and validated as part of this research, is a comprehensive and multidimensional indicator of social sustainability. Social sustainability was defined as encompassing social equity and diversity and fostering social cohesion, quality of life, and democratic governance for our second-order concept. The goodness of fit results shows that the model fits the data well and that the five dimensions, as previously mentioned, accurately represent the concept of social sustainability. As a result, this result contradicts hypotheses 1, 2, 3, 4, and 5 that suggest different dimensions of social sustainability. According to our findings, social equity, cultural diversity, and community cohesion are not strong enough to stand independently in microfinance.

Figure 5: The Structural Model Results



Source: Author’s Estimation

Regression Weights: (Group number 1 - Default model)

Path		Estimate	SE.	CR.	P	Results
Equity	<--- Microfinance	-.005	.069	-.074	.941	Rejected
Diversity	<--- Microfinance	-.078	.075	-1.041	.298	Rejected
Social Cohesion	<--- Microfinance	.015	.058	.264	.792	Rejected
Quality of Life	<--- Microfinance	.088	.070	1.260	.208	Rejected
Democracy and Governance	<--- Microfinance	-.172	.081	-2.114	.035	Accepted

Notes: P-value < 0.05

Source: Author's Estimation

Only democracy and governance, one of the five pillars of social sustainability, directly bear on microfinance. Finally, we discovered a strong link between democratic governance and social well-being. The findings of this study confirm the crucial role of strategies aimed at improving democracy and governance in fostering a society where people can live happily now and in the future.

6. Conclusion

The concept of social sustainability, an integral part of sustainable development, has been studied in numerous contexts and disciplines. There is still a lack of clear definition, conceptualisation, and contribution to microfinance from the literature review (Colantonio, 2016; Shirazi and Keivani, 2018). Using the SS scale as a comprehensive measurement model for analysing social sustainability at the vulnerable level and testing its reliability and validity using a systematic and rigorous statistical approach, this study fills this gap in the literature. It also examines how the proposed SS scale might be used to assess risk in a more vulnerable population. Additionally, we looked into the impact of less-studied urban form factors like equity, diversity, social cohesion, quality of life, and democracy and governance on Social Sustainability.

This paper furthered our knowledge of social sustainability, adding to the body of work already available on the subject. Social Sustainability is a multifaceted concept, and the proposed SS scale can help unify and consolidate its various aspects into a single framework from an academic perspective. However, despite previous studies examining individual dimensions and variables of the SS scale, they have not been studied together. We argue that ignoring these dimensions could result in an incomplete understanding of social sustainability as a multifaceted and complex phenomenon. Social sustainability measures used in previous studies have not been rigorously validated, reliable, or dimensionally analysed. This study addresses this issue. It is possible to use the SS scale to investigate how social sustainability affects vulnerable populations in the future. These studies have

received little attention and need to be explained further.

It also has a practical application in providing a more comprehensive and fine-grained view of the various social sustainability issues affecting vulnerable populations. Use the SS Scale to identify the strengths and weaknesses of vulnerabilities in terms of social sustainability across multiple dimensions.

For vulnerable people, microfinance has a significant and positive impact on five dimensions of social sustainability and the overall social sustainability of the population. There is much significance in these findings.

This study, like all others, has some limitations that can be exploited in the future. As a first possible limitation, this study's data collection of household surveys was restricted to the vulnerable people context, limiting the model's generalizability to countries with similar coastal area contexts. It is necessary to replicate this study in other countries to test its generalizability because social sustainability is affected by other countries' cultural, social, and environmental factors.

A measurement scale for social sustainability has never been attempted before. A wide scale has been developed that incorporates and categorises the most frequently used dimensions in the literature under a single umbrella, even though we cannot claim to have fully captured all social sustainability dimensions. We encourage researchers to conduct interviews or focus groups to uncover additional variables that may have been overlooked in this study to continue improving the SS scale.

Third, our literature review shows that social sustainability is a dynamic phenomenon that has evolved from traditional complex dimensions to more soft and intangible dimensions over time. A static and cross-sectional research design may not fully capture the complexity of the social sustainability concept and its constituent dimensions, we argue in this regard. It is, therefore, possible to extend the current study by conducting an in-depth analysis of social sustainability by using a long-term approach.

To conclude, we recommend that future research on the relationship between microfinance and social sustainability use a mixed-methods approach. An approach incorporating qualitative and quantitative data analysis helps shed light on what quality of design can do for people's lives and how they perceive social sustainability and quality of life. It supports social planners and policymakers in better understanding people's perceptions and expectations of the quality of life and living. It helps them address these needs more effectively and efficiently in the plans for socially sustainable localities.

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