# CONTRIBUTORY FACTORS TOWARDS SUSTAINABILITY OF BANK-LINKED SELF-HELP GROUPS IN INDIA

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The present study focuses on the Indian flagship financial inclusion scheme – the Self Help Group-Bank Linkage Programme, which successfully leverages the social collateral concept and the vast network of bank branches in India to deliver financial services to small, cohesive and participatory women's self-help groups. To develop a deeper understanding of the topic of sustainability of self-help groups, we propose a framework that conceptualizes sustainability by integrating the financial and organizational aspects of functioning of self-help groups. Sustainability is assessed in the light of the group's performance (on set of indicators) with respect to the primary objective of the Self Help Group-Bank Linkage Programme, which is financial intermediation. Subsequently, we ascertain the effect of plausible contributory factors related to group management practices on the sustainability of self-help groups. The results of regression analysis on primary data captured from a survey of 170 self-help groups show that such factors as equitable access to credit, group savings, growth in savings, loan utilization in income generation activities, members depositing a savings contribution or loan installment on each other's behalf, and distance from bank contribute significantly to group sustainability. Accordingly, designing suitable measures to monitor and improve group governance and management practices would be a critical policy intervention.

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# I.  INTRODUCTION

Approximately 1.7 billion working age adults remain financially excluded globally and almost all of these unbanked adults live in developing countries (Demirgüç-Kunt and others, 2018). In the light of the financial exclusion faced by the world's vulnerable and marginalized population, providing financial services to them is a policy priority of many governments. In addition, financial inclusion is positioned as an enabler of the 2030 Sustainable Development Goals.[1] Even though the Goals do not explicitly target financial inclusion, greater access to financial services has a significant role to play in attaining many of them, including those aimed at reducing poverty, creating jobs and improving gender equality (Klapper, EL-Zoghbi and Hess, 2016), and is also known to positively contribute to a country's financial stability (Siddik and Kabiraj, 2018). Based on this background, the focus of this study is on the Indian flagship financial inclusion programme – the Self Help Group-Bank Linkage Programme.

The Committee on Financial Inclusion in India has defined financial inclusion as "the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups, such as weaker sections and low-income groups at an affordable cost" (Rangarajan, 2008). The poor face significant problems in obtaining access to institutional credit because they have no collateral and formal financial institutions commonly categorize them as a high-cost and high-risk segment of the population (Morduch, 1999). The problem is further accentuated in the presence of acute information asymmetry[2] between financial institutions and poor borrowers. Previous studies have documented significant disparity in the access and the use of financial services by gender (Ghosh and Vinod, 2017; Swamy, 2014). Worldwide, most unbanked adults are women, and especially in developing economies, women remain less likely (than men) to have a bank account (Demirgüç-Kunt and others, 2018).[3] In fact, women in developing countries disproportionately face systemic barriers in accessing financial services because of social norms and a strong bias of inheritance laws against women, and a gender bias in land and property registration, among other factors (Fletschner and Kenney, 2014). For the same reason, microfinance interventions carried out around the world have exclusively focused on women clients; approximately

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[1]  The Sustainable Development Goals, comprising of 17 ambitious goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty in all of its forms by 2030.

[2]  Information asymmetry refers to the problem of adverse selection in which financial institutions cannot screen riskier customers from safer ones and moral hazard in which financial institutions cannot monitor the behaviour of the borrower (Sriram, 2005).

[3]  For instance, Demirgüç-Kunt and others (2014) noted that in 2014, 63 per cent of Indian men had an account at formal financial institution, as compared to 43 per cent for women.

80 per cent of all microfinance clients are women (Reed, 2015; Cull, Demirgüç-Kunt and Morduch, 2009). Various studies suggest that the impact of microcredit is known to be greater when credit is targeted to women, and that empowering women with access to financial resources serves as a vital tool for alleviating poverty (Sustainable Development Goal 1) and promoting gender equality (Sustainable Development Goal 5) (Hulme and Mosley, 1996; Kabeer, 2003; Pitt, Khandker and Cartwright, 2006). Women are also perceived to be more responsible, regular and disciplined when it comes to repaying loans. Given that they have lower mobility and fewer alternative borrowing possibilities at their disposal, especially in developing economies, this ensures high repayment rates on loans extended to them (Morduch, 1999).

In the light of the constraints to financial inclusion, especially those experienced by poor marginalized women, the financial needs of women must be addressed in unique ways. One such innovative approach to include the previously excluded and marginalized women population into the mainstream banking channel (while bringing about poverty reduction) is the Self Help Group-Bank Linkage Programme of India. As part of the Programme, groups of poor and marginalized members (referred as to self-help groups)[4] pool their savings on a regular basis and rotate pooled savings as loans within group members at unanimously decided interest rates. During that process, the members learn the nuances of financial discipline and the basics of financial management. Self-help groups are entitled to open savings accounts with a bank and after establishing their credibility (as bankable entities), they can access collateral-free institutional loans from banks. Replacing the traditional collateral, self-help groups effectively leverage the social collateral concept, which considers social ties, along with peer pressure and peer dynamics, to serve as an assurance that loan recipients will not be delinquent in repayments (Armendáriz and Morduch, 2010). Since its pilot, implemented by the National Bank for Agriculture and Rural Development in 1992, the Self Help Group-Bank Linkage Programme has become the largest community-based microfinance initiative in India – covering approximately 120 million households through 10 million bank-linked self-help groups holding deposits that exceed 230 billion Indian rupees (Rs) ($3.22 billion) and being advanced annual credit of Rs580 billion by banks on the strength of social collateral (National Bank for Agriculture and Rural Development, 2019). In serving the high volume and low margin customers, the Self

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[4]  Self-help groups work as a voluntary group of 10 to 20 members and are usually homogeneous in terms of socioeconomic background, caste and occupation. They are formed by promoting institutions, such as non-governmental organizations, banks, federations and microfinance institutions. There are three distinct models of the Self Help Group-Bank Linkage Programme: (a) self-help groups being bank-linked with active support from promoting institution, typically a non-governmental organization; (b) self-help groups being promoted and financed by banks; and (c) a promoting institution (typically a microfinance institution taking the role as financial intermediary between the banks and self-help groups). In India, almost 75 per cent of cumulative loans by banks have been disbursed under the first model. In addition, as of March 2019, 85 per cent of the self-help groups in India were all women groups and almost 80 per cent were located in rural areas (National Bank for Agriculture and Rural Development, 2019).

Help Group-Bank Linkage Programme has also proved to be cost-effective for banks, as the operational cost for a group of borrowers (through a single self-help group account) is much less than that for a large number of small-sized individual accounts (Dave and Seibel, 2002). Lending to self-help groups is also recognized as part of priority sector lending[5] by the Reserve Bank of India.

The potential of the self-help group bank linkage programme in reducing the incidence of poverty through an increase in income and building assets, and going beyond financial service provision to bring about socioeconomic benefits, such as empowering women, securing livelihoods and reviving local economies, has been well documented and reflected upon in various studies (Basu and Srivastava, 2005; Deininger and Liu, 2013; Garikipati, 2008; Holvoet, 2005; Nair, 2014; Swain and Varghese, 2009).[6] However, of late, there are rising concerns about the sustainability of self-help groups being affected by a number of factors, including, among them, irregular savings, dwindling membership, rising loan defaults, inability to access credit (typically repeat bank loans), poor record keeping, limited credit absorption capacity and excessive reliance on promoting institutions (Baland, Somanathan and Vandewalle, 2008; Isern and others, 2007; Parida and Sinha, 2010; Rao, 2009; Reddy and Reddy, 2012; Tankha, 2002). Given that self-help groups play an important role – not just as financial intermediaries, but also as agents of social change – the sustainability of these groups is of concern not only for end-beneficiaries, but also for donor agencies, practitioners and policymakers. Moreover, if self-help members are to derive positive benefits from a group membership on an ongoing basis, then it is important that the group "sustains" itself. In other words, sustainability is argued to be a prerequisite for the continued impact of microfinance on the poor (Zohir and Matin, 2004).

In the context of self-help groups, sustainability has been viewed in different ways by different authors. In some studies, sustainability has been operationalized as the long-term financial viability of the groups (Chavan and Ramakumar, 2002; Isern and others, 2007; Pati, 2009); others regard long-term linkage with the financial institutions

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[5]    Priority sector lending is aimed towards mandating the banks to provide a specified portion of bank lending to weaker sections of society, such as agriculture and allied activities, micro and small enterprises, self-help groups, housing and education. Individual women beneficiaries with a cap of Rs100,000 per borrower also fall under the scope of priority sector lending. Details on priority sector lending guidelines for Indian banks can be accessed at https://m.rbi.org.in/Scripts/FAQView.aspx?Id =87#targetText=Loans%20to%20individuals%20up%20to,and%20%E2%82%B9%203%20million %2C%20respectively.

[6]    Bhatt (2005), Parthasarathy, Thekkekara and Poonacha (2011) and Premchander and others (2009) provide an interesting compilation of stories of women, who have courageously fought for human dignity, self-reliance and socioeconomic empowerment. Benni and Barkataky (2018) have also reflected on the efforts of the Self Employed Women's Association in India – a registered trade union that organizes poor, self-employed women workers with the objective to achieve financial empowerment of women through institutionalizing the provision of credit through self-help groups.

as a benchmark of sustainability (Bhatia, 2007); few relate it to the groups being well managed and their corresponding financial and institutional performance (Dave and Seibel, 2002; Shetty, 2009, Srinivasan, 2008); and some perceive sustainability as the ability to function without dependence on promoting institution and higher level structures, such as federations[7] (Nair, 2005; Parida and Sinha, 2010; Reddy and Prakash, 2003). Although the sustainability of self-help groups has been studied by several authors in a myriad of insightful ways, there seems to be no unanimity on the conceptual framework for understanding the phenomenon of sustainability. Previous studies have also articulated the need for a comprehensive and grounded assessment of sustainability of groups (Fernandez, 2008; Nair, 2005; Shetty, 2009; EDA Rural Systems and APMAS, 2006). The present study has been conceptualized in cognizance of this need.

In this study, we attempt to elucidate the semantics of the sustainability of self-help groups by addressing two research questions: (a) What could be the indicators of sustainability for a sustainable self-help group?; and (b) What leads to sustainability? In addressing the first question, tangible indicator(s) are used to assess the sustainability of self-help groups in the light of the group's performance with respect to the primary objective of the Self Help Group-Bank Linkage Programme, which is financial intermediation. Regarding the second research question, we aim to ascertain the effect of potential drivers of sustainability of self-help groups on each of the sustainability indicators using regression analysis on primary data collected from self-help groups in the western state of Maharashtra, India. The potential drivers or factors affecting sustainability relate to the governance mechanisms around group management practices of self-help groups. The findings would serve to provide "how-to" lessons for improving the sustainability of microfinance groups.

The rest of the paper is structured as follows: Section II contains a brief discussion on the relevant literature on the topic of sustainability of self-help groups followed by a review of the selected sustainability indicators and the plausible contributory factors affecting sustainability. The hypothesized effect of the selected contributory factors on each of the sustainability indicators is discussed in section III. In section IV, a description of sample data and the research methodology is given. The results from econometric analysis of data are presented in section V. Section VI includes a discussion of the findings and suggested policy implications from the study and section VII concludes.

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[7]  A self-help group federation is a network of several self-help groups formed to facilitate the promotion of such groups, and to enhance access to credit and provide other financial, technical and marketing services to them.

## II. SUSTAINABILITY INDICATORS AND CONTRIBUTORY FACTORS

A majority of the studies in the microfinance literature dealing with the topic of sustainability of self-help groups have operationalized sustainability across two main dimensions – financial sustainability, and organizational and institutional sustainability. Financial sustainability concerns matters related to thrift and savings management, group's access to credit, credit rotation, and recovery and repayment of credit (Deininger and Liu, 2009; Mawire, 2012; Sharma, 2017; Tankha, 2002), while organizational and institutional sustainability captures groups' governance processes and is broadly assessed by monitoring the quality of groups based on various indicators, including, among them, frequency and attendance of meetings, mechanism of record keeping, conflict resolution capacity, development of financial and non-financial skills and quality of leadership (Reddy and Reddy, 2012; Seibel, 2006; Shetty, 2009). As previously discussed, this study is intended to address two research questions: (a) What could be the indicators of sustainability for a sustainable self-help group?; and (b) What leads to sustainability? In response to the first research question, the approach of Lele (1993) is used to identify the plausible indicators of group sustainability. As per this approach, sustainability of a given programme or intervention can be defined in line with the objectives of the programme at hand. Self-help groups are mainly formed for the purpose of financial intermediation, and therefore, ensuring access to credit from internal and external sources remains the central objective of the self-help bank linkage programme. Based on this, the following are considered the three main sustainability indicators of self-help groups: intra-lending; frequency of bank credit; and the amount of bank credit.

The choice of the above-mentioned indicators is aligned with the literature on financial sustainability of self-help groups. The mainstream literature related to the topic of sustainability in the context of microfinance has attached emphasis (though unwarranted) on the loan-repayment performance of the borrower (Deininger and Liu, 2009; Mawire, 2012; Sharma, 2017; Sharma and Zeller, 1997), which places lender's interest at the core. In contrast, this study offers a fresh perspective on sustainability – from the point of view of the borrower. The sustainability indicators are predominantly group centric and assist in ascertaining whether the self-help groups can achieve their primary intended role as financial intermediaries. The significance of each of the sustainability indicators is discussed below:

(a) *Intra-lending:* Intra-lending or intra-group loans refer to the process of self-help group members accessing loans against pooled group savings at pre-decided and unanimously accepted interest rates (typically between 2 and 3 per cent per month).[8] In the process of intra-lending, members learn

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[8] The interest received on the credited amount remains with the group and is used for further intra-lending.

the importance of financial discipline, which later forms the basis of establishing the group's credibility in accessing bank loans. Intra-group loans, often characterized by their small size, are mostly extended to members for their day-to-day personal needs, such as for consumption smoothing and paying children's educational expenditures, and to serve as a social insurance mechanism to cover themselves against possible shocks or risks to their income arising from sickness or death of a family member. In fact, the extent of intra-lending also serves as a proxy for the group's repayment performance, as the group cannot continue to intra-lend and be sustainable if members frequently default on internal loans. EDA Rural Systems and APMAS (2006) have documented default on intra-group loans as the most common reason for groups to break up. Against this backdrop, intra-lending, measured as the cumulative amount internally lent among the group members since inception, is considered as a critical sustainability indicator.

(b) *Frequency of bank credit:* One of the key objectives of the Self Help Group-Bank Linkage Programme is to reduce the credit dependence of the poor on non-institutional sources; accordingly, it is vital that self-help groups are able to access credit from formal sources, such as banks, on a continuing basis. The frequency of bank borrowings not only reflects the credit worthiness of the self-help group, but it also implies that the group finds it fruitful to obtain bank credit again. Several groups, however, have difficulty in accessing repeat bank loans (Bhatia, 2007). In addition, the overall number of self-help groups attaining bank credit has also remained low.[9] In pursuit of sustainability, it is important that groups are able to access repeat bank loans, as per their need. Inability to access institutional credit raises the likelihood that a group will close (Srinivasan, 2008). Accordingly, the ability of a group to access bank credit on a continuous basis is regarded as a critical sustainability indicator.

(c) *Amount of bank credit:* In the initial years of a self-help group, banks extend small loan amounts to them and upon satisfactory repayment, larger loans are extended. This mechanism of assuring new, additional larger loans if prior loans are repaid, is known as "progressive lending", which is a function of group's performance on a variety of factors including, among them, regularity of savings, discipline in intra-lending, repayment of prior loans and efficacy in record keeping (Morduch, 1999). A progressive lending mechanism serves as an effective instrument for ensuring repayment under group lending programmes by expanding the opportunity cost of non-repayment of loan and

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[9] As per report on the status of microfinance in India in 2018, out of almost 10 million self-help groups, only about 51 per cent have credit outstanding ((National Bank for Agriculture and Rural Development, 2019).

thereby discouraging strategic default (Kumar, 2012). Bank credit is typically used to purchase assets for personal use or for investment in income generation activities.[10] As loans from banks can be obtained at lower interest rate (compared to usurious interest rates on loans from informal sources), to support the sustainability of self-help groups, a large chunk of their credit requirements should be met from banks. Based on this, the amount of bank credit availed by the group since inception is considered a critical indicator of the sustainability of self-help groups.

Having identified the sustainability indicators of self-help groups, the next step is to identify the potential drivers and factors affecting group sustainability. This is important because sustainability indicators, described above, by themselves tell little as to "why" self-help groups are operating or not operating in a sustainable manner. Towards this end, we posit that the group management practices or processes (captured under the organizational sustainability dimension of self-help groups), concerning how self-help groups function, how they work as a cohesive unit, how they manage their day-to-day affairs and how they distribute and use their loans, and other various aspects of group functioning, are requirements or potential drivers for achieving sustainability. In the context of this study, the following is a set of variables seen as plausible contributory factors towards sustainability of self-help groups:

(a) *Group savings:* Self-help group members save a pre-decided amount of contribution periodically and gradually build up the group corpus that is used for lending within the group. The group savings also serves as a collateral substitute (Morduch, 1999), and typically banks extend loans to self-help groups in proportion of their cumulative savings.

(b) *Equitable access to credit:* Ensuring equitable access to credit is an important driver of sustainability, as an unequal distribution of loans not only constitutes a threat to a group's democratic functioning, but it also often leads to a group's premature demise (Thekkekara, 2011).

(c) *Group cohesion:* Cohesiveness among group members is a key driver of sustainability, as it enables the self-help group to remain united in pursuit of its goals and objectives. Absence of cohesion is reflected by member attrition, which is one of the major reasons behind a group's closure (Baland, Somanathan and Vandewalle, 2008).

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[10] While formal and informal sources of finance coexist in the form of bank loans and intra-lending, respectively, there are differences in loan utilization patterns for bank loans vis-à-vis intra-group loans. Additionally, unlike intra-group loans, a bank loan amount is typically larger in size. Moreover, the frequency in which members are able to access bank loans vis-à-vis intra-group loans also differs markedly (the former being lower than the latter).

(d) *Paying on each other's behalf:* The phenomenon of self-help group members paying a savings contribution or a loan installment on each other's behalf, particularly in times of need, is referred to as intra-group insurance by Verhelle and Berlage (2003) and as social empathy ("the ability to imagine oneself in the shoes of others") by Bardhan (1993). This practice helps the group to maintain regularity of savings while also preserving its credibility in the eyes of the banks.

(e) *Loan utilization for income generation activity:* The growth-trajectory of self-help groups, as conceived by policymakers, non-governmental organizations, government and banks, is to initially help group members meet their core needs of savings and credit for consumption and gradually enable the group to set up their own microenterprises and subsequently take up loans to support their income generation activities (Kashyap, 2008). Using loans for income generation activities not only increases the likelihood of a group accessing larger loan amounts (from internal and external sources), but it also offers better earning opportunities to self-help group members, while enabling the group be a source of job creation in their communities (Guha and Gupta, 2005).

(f) *Signing financial records:* Self-help groups maintain financial records to document the group's financial transactions and activities. The records are comprised of the collection of member savings, disbursal of credit among members and the collection of loan repayment. The practice of group members signing against group's financial records helps to maintain accountability and transparency in functioning, and is therefore an important contributory factor towards achieving the sustainability of self-help groups (Isern and others, 2007).

(g) *Growth in savings:* When a self-help group is established, the members decide to save a fixed amount to their group corpus on a regular basis. Some groups continue to save the same amount over the years, while others increase their savings contribution after a few years. Committing to an increased savings contribution is indicative that members are able to appreciate the benefits of the saving mechanism. In addition, a positive trend in growth of group savings not only increases the group's corpus fund, but it also makes the group eligible for larger bank loans, in line with the increased pooled savings (Misra and Lee, 2007).

(h) *Training for skill building:* Self-help groups are exposed to a range of different capacity-building interventions or trainings. While the general training includes basic literacy, book keeping, group formation, leadership development and group dynamics, the skill building training is primarily administered to more mature groups and is aimed at encouraging members to initiate income generation activities. Skill building trainings, in particular

those that the members explicitly request based on their interests and skills, are likely to affect group sustenance in a positive manner (Mann and Randhawa, 2015; Reddy and Reddy, 2012).

(i) *Homogeneity:* Homogeneity in group composition implies sharing common socioeconomic characteristics across a variety of indicators, such as age, education, marital status, caste and occupation. It is expected that in homogeneous groups, information asymmetry is lower (Stiglitz, 1990; Devereux and Fishe, 1993) and accordingly, group sustainability is favourably affected. Furthermore, if members come from similar social and financial backgrounds, there would be an equal opportunity of self-expression among them (Parida and Sinha, 2010).

In addition to the above factors, the effect of the distance variable (distance from a bank) and group size on the sustainability of a self-help group is also controlled for. Distance from a banking service is as an important determinant of access to institutional credit – with increasing physical distance being a commonly reported barrier to access (Demirgüç-Kunt and others, 2018). Similarly, group size affects the cost of monitoring and coordinating meetings. In previous studies, it has been documented that larger groups perform better because they are more likely to take advantage of economies of scale (by serving bulk orders for their collective microenterprises) and also because of the prevalence of intra-group insurance (Godquin, 2004; Zeller, 1998).

To summarize, the choice of sustainability indicators in this study is such that sustainability is viewed as the group's access to internal and external financing, corresponding to intra-lending and bank loan, respectively, while the factors affecting group's sustainability are those that are concerned with the functioning of self-help groups and their group management practices. To the best of our knowledge, this study is novel in conceptualizing sustainability by integrating the financial and organizational aspects of the functioning of self-help groups. This research is motivated by the need to deepen the understanding of the phenomenon of the sustainability of self-help groups. Such need is situated in the light of the concerns about the self-help groups in India as reflected by lack of transparency, multiplicity of membership, quality issues, manual book keeping and unavailability of credit history of members. Theory testing is therefore not the primary objective of the study. Consequently, framing of the hypothesized relation between the set of sustainability indicators and the factors affecting sustainability is grounded in the field work and interaction with self-help group members, practitioners, banks and non-governmental organizations and not in any specific theory per se.[11]

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[11] Helfat (2017) provides a coherent argument for using empirical research to investigate a real-world phenomenon, especially in the discipline of management science, rather than giving excessive emphasis on theory testing.

# III.  FACTORS AFFECTING THE SUSTAINABILITY OF SELF-HELP GROUPS

Given that in this study, the sustainability of self-help groups is assessed across three tangible indictors. In this section, we hypothesize the effect of a set of group management practices on each of the sustainability indicators.

**Potential determinants of intra-lending**

The set of factors affecting group level intra-lending are discussed herein. First and foremost, as collective group savings is the building block of the self-help group movement, we hypothesize it to have a favourable impact on intra-lending, such that an increase in group savings will lead to an increase in the group corpus and consequently, intra-lending would be positively affected. Next, it is hypothesized that the amount of money internally lent would be positively affected if members were to have equitable access to credit. This is because as more members take loans from the group corpus, the loan amount gets better spread and this speeds up the loan repayment cycle, thereby enabling greater intra-lending. In addition, internal loans accessed by all members build a greater sense of belonging to the group as members see the benefits of group membership getting equally shared among all. This further strengthens the commitment of members towards group activities, ensuring timely savings and repayments and reinforcing greater intra-lending. Cohesive groups in which members continue to stick together and remain united in pursuit of the groups' goals and objectives are hypothesized to experience greater intra-lending because members would be more aware of each other's needs and situations and consequently would be willing to extend loans to peers as and when required. Moreover, no change in group composition since inception would also help in effectively dealing with the moral hazard problem. Next, with an increase in the percentage of members using loans for income generation activities, intra-lending is expected to be favourably affected. This is because as a greater percentage of members use their loans for income generation activities, they would frequently resort to taking loans from the group corpus to support their enterprises, thereby increasing intra-lending amount. In the process of supporting micro-businesses, the entrepreneurial skills of members also improve and members may undertake additional entrepreneurial activities, which are likely to boost group level intra-lending.

Similarly, the practice of signing financial records is hypothesized to have a positive effect on intra-lending. This is because implementing such a practice enables the members to monitor the savings and loan repayment performance of other members in the group, thereby serving as a mild form of informal peer audit of the group's financial records. In addition, adherence to this practice is expected to bring in transparency to the group's functioning, which is key to building trust, and thereby

positively affect intra-lending. With respect to homogeneity, it is hypothesized that groups that are homogeneous regarding occupation and caste engage in greater intra-lending among themselves. This is because homogeneous groups ensure that members are better able to monitor how their peers use loans and consequently ensure repayments; regular repayments are crucial for the group to continue to engage in intra-lending. Finally, regarding the effect of the distance variable, it is hypothesized that the distance of a bank, if far, may act as a potential deterrent for the members to regularly deposit their savings contribution at the bank outlet. Consequently, savings would be kept with office bearers at their home, which could increase chances of misappropriation of funds and adversely affect the trust of members on group's functioning, possibly leading to decrease in intra-lending. Accordingly, the proximity to banks is expected to favourably affect intra-lending.

### Potential determinants of frequency of bank credit and amount of bank credit

The set of factors affecting group sustainability with respect to access to external loans are discussed in this section.

It is hypothesized that groups in which members deposit savings contributions or loan installments on each other's behalf could access a greater number of bank loans and larger amounts. This practice not only ensures regularity of saving, but it also enables timely repayment of loan installments, which would positively affect the group's likelihood of accessing bank loans. Next, it is expected that frequency and the amount of bank credit accessed would be high for groups in which a greater number of members use the loans for income generation activities. This is because using loans for such activities hints at the entrepreneurial capabilities of group members and groups with more entrepreneurial members would access more loans (and of larger amounts) from banks. In fact, investing a bank loan in income generation activities is favoured by banks as they regard the likelihood of loan repayment to be high if loans are invested in such activities, as compared with using the loans for consumption purposes. The effect of an increase in savings contribution on the frequency and amount of bank credit accessed is studied by including two terms, growth in savings and growth in savings square. Accordingly, a two-pronged hypothesis is proposed. It is expected that with an increase in the per member savings contribution, the frequency and amount of credit accessed would be positively affected, as the group corpus would increase and it would be easier for group members to access more loans against their increased savings. However, if the degree of the increase in per member savings contribution is very high, it is then likely that the group's dependence on external loans would fall as members would be able to meet their credit needs from their internal group corpus.

Furthermore, it is postulated that groups that have undergone specific skill training (of their choice) are likely to access a greater number and amount of bank loans. This is because if the members themselves decide on the kind of microenterprise training they would like to receive, then their chances of starting a microenterprise would be high. Subsequently, the group is likely to access more bank loans to invest in or support their businesses. Next, it is hypothesized that with increasing distance from a bank, both the sustainability indicators – frequency and amount of bank credit – would be adversely affected. Finally, with a rising group size, it is hypothesized that the number and amount of bank loans would increase because of higher demand for borrowing.

## IV.  STUDY AREA, SAMPLE DATA AND ESTIMATION STRATEGY

**Study area**

For this study, a primary survey of self-help groups was carried out in Thane district of the state of Maharashtra, India over the period April-September, 2013. The survey was conducted in collaboration with Mahila Arthik Vikas Mahamandal, a nodal agency tasked with implementing women empowerment programmes in Maharashtra through self-help groups. While the concerned nodal agency has presence in all the districts of Maharashtra, based on discussions with nodal agency officials, we identified Thane district as the study area given that it had a good mix of self-help groups with different age groups. The questionnaire was administered to random sample of 170 all women self-help groups that had been functioning for at least three years. The threshold of three years is as per expert advice obtained from bankers and other stakeholders in the field of self-help group banking on the view that groups operating for less than three years have not necessarily achieved a level of stability with regard to adherence to set of processes and are also unlikely to have obtained repeat loans. After cleaning the data for missing entries, the sample size consisted of 155 self-help groups.

**Sample data**

A structured questionnaire was used to solicit data from self-help groups in the following areas: (a) group composition; (b) details on the mechanism of group formation; (c) performance of the groups on various financial, governance and institutional parameters; and (d) information on bank linkage of groups. Group interviews were held with office bearers (leaders, secretaries, treasurers), given their crucial role in the functioning of the group. The record books maintained by self-help groups, such as savings-cum-loan ledger, the meeting minutes book and their bank pass book, were personally examined. In general, group meetings were held on a monthly basis and the attendance was high. All the groups had an exclusive female membership and, on average, a group had 11.24 members. The groups, on average, had existed for six years

(ranging from 3.07 years to 15.96 years). Average years of education of the group leaders and secretaries was 7.55 years (ranging from no schooling to graduation) and 7.14 years (ranging from no schooling to post-graduation), respectively, while group members, on average, had been educated for 4.08 years. Approximately, 42 per cent of the members belonged to the Other Backward Castes, 31 per cent members were of the Scheduled Tribe and the remaining 27 per cent belonged to the Scheduled Caste. Agriculture was the primary occupation of approximately 73 per cent of the group members, and 20 per cent of them had migrated to find work or worked as labourers on agriculture farms of people from the same or other villages. Only 7 per cent of the members reported to be either working in a salaried job or as self-employed in small businesses.

A summary of the profile of the sample self-help groups on sustainability indicators and potential drivers of sustainability is presented in tables 1 and 2, respectively. In this study, the unit of analysis is a group, so the variables are studied at the group level, and not on a per capita basis.

### Table 1. Profile of self-help groups on sustainability indicators

| Sustainability indicators | Measured as | Mean | Range | Standard deviation |
|---|---|---|---|---|
| Intra-lending | Amount internally lent since inception (in Indian rupees) | 109 386 | (5 000-632 000) | 6 592 |
| Frequency of bank credit | Number of times bank loan accessed by the group since inception | 1.63 | (0-6) | 0.93 |
| Amount of bank credit | Cumulative amount of bank loan availed by the group since inception (in Indian rupees) | 91 079 | (0-332 000) | 4 950 |

*Source*:  Author's compilation.

**Table 2. Profile of self-help groups on potential drivers of sustainability**

| Variables | Mean values |
|---|---:|
| *Group savings* | |
| Cumulative amount of group savings (in Indian rupees) | 50 695 |
| *Equitable access to credit* | |
| Groups in which all members have accessed internal loans from group corpus | 31% |
| Groups in which all members have not accessed internal loans from group corpus | 69% |
| *Group cohesion* | |
| Groups in which all members continue since inception | 60.65% |
| Groups in which members have dropped or added since inception | 39.35% |
| *Paying on each other's behalf* | |
| Groups in which members pay savings or an installment on each other's behalf | 74.84% |
| Groups in which members do not pay savings or a loan installment on each other's behalf | 25.16% |
| *Loan utilization for income generation activity* | |
| Percentage of group members using loan for income generation activity averaged over number of loans taken | 23% |
| *Signing financial records* | |
| Groups in which members have signed financial records over the past six months | 81.94% |
| Groups in which members have not signed financial records over the past six months | 18.06% |
| *Growth in savings contribution* | 56.7% |
| *Training for skill building* | |
| Groups that have received skill-formation trainings (of their choice) | 25% |
| Groups that have not received such trainings | 75% |
| *Homogeneity* | |
| Non-homogeneous by occupation or caste | 10.96% |
| Homogeneous by occupation or caste | 30.24% |
| Homogeneous by occupation and caste | 58.80% |
| *Distance from bank* | 7.6 (km) |
| *Group size* | 11.63 |

*Source:* Author's compilation.

**Estimation strategy**

The effect of the relevant set of factors (explanatory variables) on each of the sustainability indicators is discerned using regression analysis. To determine factors that influence intra-lending and the amount of bank loans accessed, an ordinary least square regression is done by taking the natural logarithm of the dependent variables. The log-linear regression model is estimated as the residuals that are closer to the normal probability curve in the case of logarithmic specification, as against the non-log form. All explanatory variables that are categorical in nature are used for the analysis by converting them to dummy variables and specifying a baseline/reference category; for n levels of a variable, n-1 dummies are needed. Frequency of bank credit – measured as number of times bank credit accessed (NCA) is a discrete variable, with values ranging from one to six (as shown in table 1), and there is a natural ordering to values of this variable. The data for NCA are rank ordered, namely NCA taking value six implies a greater number of bank loans as against value one. Accordingly, three ordered categories were created for the variable NCA. The categories correspond to accessing bank loans once, twice and three times or more. Subsequently, the ordinal logistic regression model is used to estimate the probability of being classified to specified ranks or levels. McCullagh (1980) introduced the ordinal logistic regression model for predicting ordinal variables (variables that are discrete in classification but ordered in values) as a function of some explanatory variables ($x_1$, $x_2$, ..., $x_n$). The cumulative logit model is the most widely implemented ordinal logistic regression model (Agresti, 2002). It is also known as the proportional odds model (McCullagh, 1980) in which the effect of predictor(s) is assumed to be the same for all categories of the dependent variable. The maximum likelihood estimation technique is used to estimate unknown parameters of this model. The ordinal logistic regression equation for NCA is given below:

$$\frac{Pr\ (NCA = r)}{Pr\ (NCA < r)} = e^{\alpha_2 + ..... + \alpha_r + \beta_1 x_1 + \beta_2 x_2 + ..... + \beta_n x_n}$$

where, r = 3 corresponds to three ordered categories. The parameters ($\beta s$) in the cumulative logit model are interpreted as the natural logarithm of odds of being in a higher category, as opposed to being in any of the lower categories (Mennard, 2010).

# V. RESULTS

The regression results for each of the sustainability indicators are separately discussed below. For intra-lending, the model was run across the 155 self-help groups, however for the other two indicators, the sample size was 143 (as 12 self-help groups had yet to access a bank loan).

**Estimation results for intra-lending**

To nullify the effect of age on intra-lending, the parameters are estimated for annual intra-lending. The model for annual intra-lending is significant as a whole (*F*-value = 21.95, *p*-value < 0.001) and explains the variance of dependent variable reasonably well ($R^2$ = 55%, adjusted $R^2$ = 52%). The estimation results for intra-lending are presented in table 3.

**Table 3. Regression results for intra-lending**

| Explanatory variables | Description | Expected sign | Parameter estimates |
|---|---|---|---|
| Annual group savings | Annual savings of group | + | 1.28 (11.08)*** |
| Equitable access to credit | All members have not accessed internal loans (baseline) | | ---- |
| | All members have accessed internal loans | + | 0.34 (2.90)*** |
| Group cohesion | Change in member composition since inception (baseline) | | ---- |
| | No change in member composition since inception | + | 0.03 (0.29) |
| Loan utilization in income generation activity | Percentage of members using loan for an income generation activity averaged over the number of loans taken | + | 0.46 (2.66)*** |
| Signing financial records | No (baseline) | | ---- |
| | Yes | + | 0.29 (1.77)* |
| Homogeneity | Homogeneous by occupation or caste (baseline) | | ---- |
| | Non-homogeneous by occupation and caste | - | 0.04 (0.18) |
| | Homogeneous by occupation and caste | + | 0.07 (0.58) |
| Distance | Distance from bank (km) | - | -0.01 (-1.22) |
| Intercept | | | -2.46 (-2.22)** |

*Notes:* t-ratios are in parenthesis. The superscripts *, **, *** imply 10%, 5% and 1% levels of significance, respectively.

Annual group savings have a significant positive effect on the amount of intra-lending among the group members, thereby supporting the proposed hypothesis. Similarly, equitable access to credit has a significant positive effect on intra-lending. An increase in the percentage of members using loans for income generation activities results in an increase in intra-lending. The regression coefficient for signing financial records is significant and positive, thereby supporting the hypothesis. Having a high level of homogeneity appears to have no significant effect on intra-lending, therefore the proposed hypothesis is not supported. Similarly, distance from a bank seems to have no effect on intra-lending.

### Estimation results for the number of times bank credit accessed

For NCA, the ordinal logistic regression model is fitted to model the three ordered categories of NCA (once, twice and three times or more). The expected sign of effect of relevant explanatory variables and the regression results are presented in table 4. The regression results are interpreted as odds of improving NCA corresponding to improvement in explanatory variables.

### Table 4. Results of the ordinal logistic model for number of times bank credit accessed

| Explanatory variables | Description | Expected sign | Parameter estimates |
|---|---|---|---|
| Paying on each other's behalf | No (baseline)<br>Yes | <br>+ | ----<br>2.24 (9.35)*** |
| Loan utilization in income generation activities | Percentage of members using loan for income generation activities averaged over number of loans taken | + | 2.94 (18.89)*** |
| Growth in savings contribution | Growth in savings contribution<br>(Growth in savings contribution)$^2$ | +<br>- | 1.60 (4.95)***<br>-0.47 (0.63)*** |
| Training for skill building | No (baseline)<br>Yes | <br>+ | ----<br>1.29 (3.63)*** |
| Distance from bank | Distance from bank (km) | - | -0.12 (0.89)*** |
| Group size | Number of members in group | + | 0.19 (1.21)* |
| Intercept 1 | | | -7.47 *** |
| Intercept 2 | | | -3.93 *** |
| | -2LogL (intercept only) | | 280.88 |
| | Intercept and covariate | | 200.47 |

*Notes:* Odd ratios are in parenthesis. The superscripts *, **, *** imply 10%, 5% and 1% levels of significance, respectively.

The practice of paying loan and savings installments on members' behalf has a positive effect on NCA, as the odds of improving NCA increase by 9.35 times when group members adhere to this practice. Similarly, with an increase in the percentage of members using the loan for an income generation activity, the odds of improving NCA increase by 18.89 times. In addition, the odds of improving NCA increase by 4.95 times with an increase in a savings contribution. With substantial increase in savings, however, the odds decline by 0.63 times, thereby supporting the proposed hypothesis (this phenomenon is discussed in detail in the next section "Estimation results for the amount of bank loans accessed").

The effect of trainings is as expected; the odds of improving NCA increase by 3.63 times if groups receive skill-development training (of their choice). The effect of group size on NCA is also as expected; the odds of improving NCA increase by 1.21 times with an increase in group size. There is a negative effect of increasing distance from a bank; the odds of improving NCA decline by 0.89 times as the distance from a bank increases.

**Estimation results for the amount of bank loan accessed**

The regression model is significant as a whole (*F*-value = 18.69, *p*-value < 0.001) and explains the variance of dependent variable reasonably well ($R^2$ = 49%, adjusted $R^2$ = 47%). The estimation results for amount of bank loan accessed are presented in table 5.

**Table 5. Regression results for amount of bank loan accessed**

| Explanatory variables | Description | Expected sign | Parameter estimates |
|---|---|---|---|
| Paying on each other's behalf | No (baseline) | | ---- |
| | Yes | + | 0.54 (3.13)*** |
| Loan utilization in income generation activity | Percentage of members using the loan for an income generation | + | 2.07 (8.64)*** |
| Growth in savings contribution | Growth in savings contribution | + | 0.49 (2.29)** |
| | (Growth in savings contribution)$^2$ | - | -0.14 (-2.09)** |
| Training for skill building | No (baseline) | | ---- |
| | Yes | + | 0.43 (2.45)** |
| Distance from bank | Distance from bank (km) | - | -0.02 (-1.58) |
| Group size | Number of members in group | + | 0.10 (2.29)** |
| Intercept | | | 8.84 (16.39) *** |

*Notes:* t-ratios are in parenthesis. The superscripts *, **, *** imply 10%, 5% and 1% levels of significance, respectively.

Regarding the effect of members using a loan for income generation activities, it is observed that the regression coefficient for this variable is positive and significant, and therefore supports the hypothesis. The regression coefficient for depositing a savings contribution or loan installment on another member's behalf is also significant and positive, as expected. Regarding the effect of an increase in savings contribution, the two-pronged hypothesis is supported as the regression coefficient for growth in the savings contribution is positive and significant, while the coefficient for (growth in savings contribution)$^2$ is negative and significant. This non-linear relationship implies that an increase in savings has a positive effect until a turning point is reached and beyond that, the effect is negative. This effect is graphically shown in the figure in which it can be seen that beyond an increase in the savings contribution of 150 per cent, which is the threshold or turning point, the group's dependence on external bank loans declines.

**Figure. Non-linear relationship between growth in savings and amount of bank loan accessed**
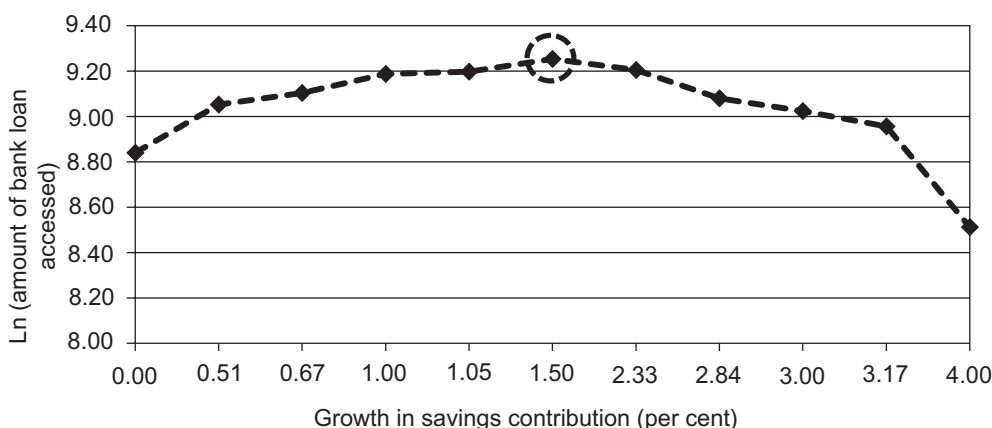


As expected, groups that have received the required skill formation training are seen to access a greater amount of bank credit. Finally, while group size is seen to have a significant positive effect on the amount of the bank credit accessed, there is no significant effect of distance from a bank.

**Model adequacy checking**

For this study, the adequacy of each of the fitted models was also assessed. As part of the regression diagnostics to determine whether the ordinary least squares regression model adequately fits the data for intra-lending and the amount of bank loan accessed, residual plots are examined (Cohen and others, 2003). The residual plots

suggest that the fitted model is adequate as the residuals meet the assumptions of normality and homoscedasticity. The variance inflation factor values are below 10 for the explanatory variables used in each of the models, suggesting that there is no multicollinearity problem (Gujarati and Sangeetha, 2007). Similarly, for the ordinal logistic regression, three different test statistics, likelihood ratio, score and wald, are used to test the significance of the predictor/explanatory variables. These test statistics follow chi-square distribution and are a commonly used measure of model fit (Hosmer and Lemeshow, 2004). All three test statistics indicate good model performance. The model performance is also judged by the measure of association of predicted probabilities and observed responses, which is captured by area under the receiver operating characteristic curve (AUC values). For the response variable NCA, the AUC value is 0.86; Hosmer and Lemeshow (2004) suggest that AUC values greater than 0.8 indicate good model performance.

## VI.  DISCUSSION AND POLICY IMPLICATIONS

This section contains a summary of the main findings of the study and highlights of the implications of the findings for policy and practice. The main theme of this study is concerned with the topic of sustainability of bank-linked self-help groups in India, broadly defined in microfinance literature as repeating performance in the future (Shreiner, 1996). The meaning of sustainability, however, varies depending on who is using it and in the context in which it is being used (Bell and Morse, 2008). The contribution of this study is a conceptual framework for addressing the topic of sustainability of self-help groups, which fills a crucial research gap. The proposed manner of studying sustainability of self-help groups not only takes into account the group's financial performance with respect to specific outcomes or objectives, but also reflects on the means to achieve the said outcomes. Focusing on the means alongside outcomes is helpful in understanding the linkage between these two aspects and enables appreciation of the reasons for the observed outcomes. This approach to studying sustainability shows allegiance to the idea of Mahatma Gandhi on means and ends (Mantena, 2012), as Gandhi observed, "The clearest possible definition of the goal and its appreciation would fail to take us there if we do not know and utilize the means of achieving it. I have, therefore, concerned myself principally with the conservation of the means and their progressive use. I know that if we can take care of them, attainment of the goal is assured" (Gandhi, 1933, p. 393). An important policy implication arising from this conceptualization is that groups need to be made cognizant that if they are to perform well with respect to outcomes, in this case, the sustainability indicators, they need to focus on designing and implementing appropriate governance mechanisms around group management processes.

With regard to the choice of sustainability indicators, it is important to note that while access to credit is crucial for group sustenance, the policy framework for enabling financial inclusion through self-help groups should be designed in a way that gives consideration to the coexistence of formal and informal credit markets. This implies that policy-level planning for developing appropriate financial products needs to take into account the complex and dynamic nexus of internal and external credit mobilization practices of self-help groups (corresponding to intra-lending and bank loans, respectively), especially as the reasons for borrowings from formal and informal markets are primarily different (Mohielden and Wright, 2000). In addition, the findings from the regression analysis (section V) highlight the effect of different group management practices on each of the sustainability indicators. Of all the contributory factors, the factor "percentage of members using the loan for income generation activities" has a significant positive effect on the three sustainability indicators. Self-help group members using loans for income generation activities suggest that their individual financial needs have been met. It also indicates that having set up their microenterprises, the members are subsequently availing bank loans more frequently of larger amounts, while also mobilizing internal credit to augment the group's working capital to further expand their business, thereby having a significant positive effect on the sustainability indicators. The results indicate, however, that the percentage of members who had used their loans for income generation was low (merely 23 per cent, as reported in table 1). This is indicative of the bottlenecks typically faced by the group members in initiating microenterprises. Previous studies have documented the lack of adequate skills, infrastructure support and market linkages as the primary reasons preventing self-help groups from graduating from the stage of microfinance to the stage of microenterprises (Mahajan, 2005; Kashyap, 2008). This calls for policymakers to formulate and offer a specific handholding strategy that provides focused trainings to self-help group members on financial and non-financial aspects of running a business, including the basics of financial management, imparting knowledge of making a business plan, market, production expenses and raw material sourcing. In addition, there is a dire need for policy interventions and solutions that enable investment in infrastructure – physical, marketing and technological, to help self-help groups successfully set up and run their micro-entrepreneurship models.

With respect to the factors affecting intra-lending, the findings suggest that in addition to loan utilization in income generation activities, it is positively affected by group savings and members having equitable access to credit. Group savings is the building block of the self-help group movement. The "savings first and credit later" strategy of the Self Help Group-Bank Linkage Programme has made great progress in inculcating financial discipline among self-help group members. While a great effort must be made to inculcate the need for regular savings by group members, there is even greater need for using the power of information technology to keep a record of the pattern of savings of the group members. This not only ensures transparency in group

functioning, but it also enables the lenders to gauge the quality of the groups (on the savings aspect) before taking credit decisions. With regard to the second factor, it is important that self-help group promoting institutions and banks strongly focus on ensuring that benefits of group membership are equally shared among members. This is reflected in members having equitable access to credit. Nonetheless, ensuring implementation of this practice is easier said than done, given that monitoring intra-lending activity at such minute levels is labour- and time-intensive. As such, digitization of self-help group level transactional data is potentially a critical policy intervention (the digitization initiative is discussed in detail later).

With regard to factors that significantly affect the frequency and the amount of bank credit accessed, it is observed that there is a non-linear relationship between growth in savings contribution and group's dependence on external bank loans. The decline in frequency and amount of loan accessed (beyond a threshold point) can be explained by two possible reasons: (a) substantial increase in savings increases the group corpus and consequently group members prefer to rely on intra-lending instead of relying on external bank credit; and (b) as a result of participation in the Self Help Group-Bank Linkage Programme, the disposable income of group members has increased (as documented in studies by Mahila Abhivrudhhi Society, Andhara Pradesh, 2017; Rao, 2009; Swain and Varghese, 2009), and subsequently the dependence of group members on bank credit facilities through a self-help group scheme declines as the members opt to access individual bank loans (Karmakar, 2008; Reddy and Reddy, 2012). An important implication of this finding is that if required handholding or capacity-building were to be provided to such self-help groups with the objective to enable them to establish microenterprises, then bank lending to the groups could be revived. Similarly, the practice of group members extending savings or loan installments on each other's behalf has a significant positive effect on accessing external loans. While this practice is indicative of the discipline maintained by the group in ensuring regularity of savings and avoiding defaults on bank loans, the challenge is for lenders to have ready access to these data, which is only possible if the accounts of self-help groups are digitized so the lenders can attain reliable inputs required to take credit decisions.

In addition, making available specific skill training has a favourable effect on group sustainability, that is, such groups access a greater number and amount of bank loans. However, the fact that only 25 per cent of the groups reported receiving skill-building training of their choice (table 2) is worrisome and against the participatory spirit of the Self Help Group-Bank Linkage Programme. A relevant policy implication from this finding is that if the government, banks and promoting institutions are serious about enhancing the credit absorption capacity of groups, then due emphasis must be placed on the voice of self-help group members in deciding the type of training they need for setting up their microenterprises, rather than being imposed with skill-building trainings that are of

little relevance to them.[12] With suitable training being extended to the group, it is likely that the percentage of members using loans in income generation activities and groups undertaking collective microenterprises would also increase. Furthermore, while taking into consideration the interest and existing skill set of members is important before offering skill-building exercises, an objective analysis of the market demand is also critical for such an initiative to succeed. In this respect, the role of promoting institution is of paramount importance, as presently, a majority of self-help group promoting institutions are non-governmental organization, and most of them have little business acumen and lack the capability to make a business plan and establish market linkages for the group. In this regard, the National Bank for Agriculture and Rural Development could possibly take the lead in facilitating such trainings for self-help groups. Homogeneity in group composition did not seem to have any effect on the selected sustainability indicators of the self-help groups. While this may seem counterintuitive, it is important to note that each of the sustainability indicators is related to the financial objective of the Self Help Group-Bank Linkage Programme. If the sustainability indicators had been so selected that they spanned across alternate dimensions, such as temporal, social or institutional, perhaps the effect of the homogeneity factor could be discerned.

Finally, with regard to the effect of distance from a bank, this factor appears to affect the frequency of accessing bank credit. The reason behind this phenomenon can be attributed to the social and cultural norms, traditions and gender biases within communities that not only act as a barrier for women to travel long distances, but it also restricts the people with whom they can interact (Fletschner and Kenny, 2014). In this respect, it is important to reflect on the role of technological innovations in bolstering financial inclusion. Digital financial services, for instance, are offering a new way to reach the last-mile customer in a cost-effective and affordable manner. In the context of the Self Help Group-Bank Linkage Programme, realizing the game-changing potential of digital financial inclusion is dependent on two core activities: (a) digitization of self-help group-level data; and (b) facilitating group members' access to and usage of digital payments. Regarding the first activity, digitizing social and financial information of the self-help groups is the first step in making it easier for bankers to do business with the groups. Post digitization, banks can readily access the book of accounts of self-help groups, the credit history of group members (using Aadhar-linked identities of members), and information on group-level day-to-day activities of self-help banks. Subsequently, banks can use this information to draw insights regarding the loan repayment behaviour

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[12] During the field work, multiple groups complained of being forced to enrol for trainings for the sake of it. On the contrary, while a majority of the groups in the sample were dependent on agriculture as their primary occupation and expressed interest to be trained on ways to improve their agricultural productivity, such trainings were not being offered. In this regard, it is important to reflect on the Kudumbashree programme of Kerala (India), which has successfully trained women on group farming initiatives (Agarwal, 2018).

of group members, gauge the quality of the self-help groups and take informed decisions on credit allocation. The digitization of group-level records is being carried out by the Government of India as part of the EShakti project, which was launched in 2015 (in two districts) and has been extended to more than 100 districts (as of 2018) under the aegis of the National Bank for Agriculture and Rural Development.

Access to digital payments – whether on mobile phones, cards or online – has a critical role to play in fast-tracking financial inclusion for millions of unbanked adults. Digital payments not only lower the cost of providing financial services to the poor, but they also increase the safety and convenience of using a range of financial services, such as savings, payments, remittances, and insurance products (Realini and Mehta, 2015). Among the various means of digital payments, use of mobile phone is considered to be the most effective way of advancing financial inclusion, given that nearly 80 per cent of adults in emerging economies own a mobile phone (Manyika and others, 2016). Initiatives, such as M-PESA in Kenya, Wizzit in South Africa, Smart Money and G-Cash in the Philippines, MicroEnsure in Asia and Africa, and Eko and FINO in India, have revolutionized mobile payments by offering solutions that have been built around the pain point of the customers, while leveraging on the existing technological resources of the community or the local market. In fact, these innovative companies have illustrated the transformative potential of using a technology-centric approach, applying design-thinking principles, and having a collaborative mindset to form partnerships across sectors, so as to enable access to and usage of digital payments in a convenient, reliable and affordable manner (Goswami, 2016; Realini and Mehta, 2015).

With regard to India, while mobile phone penetration has increased phenomenally from five million subscribers in 2001 to 1.16 billion subscribers in 2019 (in a population of about 1.3 billion), the usage of mobile payment services remains far from universal. In addition, despite the country's efforts to make mobile Internet more affordable, the gender gap remains a major challenge. For instance, women in India are 56 per cent less likely to use mobile Internet and 26 per cent less likely to own a mobile phone (Global System for Mobile Communications, 2019). Apart from low levels of financial literacy and digital literacy among self-help group women members, social norms also play a major role in restricting women's access to and usage of mobile services (Barboni and others, 2018). Accordingly, the success of the new wave of financial inclusion will be judged by its ability to close this striking gender gap. Towards this end, a new synergy among various stakeholders, banks, mobile companies, credit bureaus, non-governmental organization and government, which have traditionally operated in their own silos, and willingness to innovate in delivery of financial services to the base of the pyramid population are required.

# VII.  CONCLUSIONS

Similar to other microfinance programmes, the Self Help Group-Bank Linkage Programme of India has focused primarily on women, who are the most vulnerable among the financially excluded. The crux of the study is in developing a deeper understanding of what constitutes sustainability and its contributory factors. Sustainability of bank-linked self-help groups is viewed in terms of access to financial services (from internal and external sources) for the group and has been captured across three indicators of financial performance, intra-lending, frequency of bank credit and amount of bank credit availed by the group members. Subsequently, the effect of a set of contributory factors that reflect the manner of functioning or organizational aspects of self-help groups on each of the sustainability indicators has also been ascertained. The results of regression analysis suggest that equitable access to credit, group savings, growth in savings, loan utilization in income generation activities, making available suitable training and distance from a bank are significant contributors to group sustainability (at 1 per cent level of significance). Overall, the findings from this study may be considered as suggestive of best practices that would help self-help groups make progress towards the sustainability frontier.

There are few limitations in this study, which could be addressed as part of future research work. First, operationalizing sustainability of self-help groups with respect to different socioeconomic objectives, as against purely financial objectives, as has been done presently, could provide further insights. Moreover, given the lack of access to member level-data for this study (as the unit of analysis is the group), it has not been possible to ascertain the effect of initiating microenterprises on members' incomes and assets, which many studies consider as the true measure of success of self-help groups. Another limitation of this research is inability to survey self-help groups that are no longer functioning. Comparing closed and running groups across sustainability indicators and corresponding group management practices could give in-depth insight into the reasons for failure of some of the self-help groups. To conclude, the Indian experience with the Self Help Group-Bank Linkage Programme has demonstrated that small, cohesive and participatory groups of the poor (that is, the self-help groups) are indeed creditworthy and bankable entities and that the "savings first and credit later" strategy is a win-win move, with transaction costs reduced for the borrowers and banks. Through the sustainability of self-help groups, the vast multitude of financially excluded and marginalized women can access institutional credit on a sustainable basis.

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