

DEVELOPING A MULTIDIMENSIONAL  
FRAMEWORK FOR THE EVALUATION OF  
WOMEN'S SELF HELP GROUPS

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## ABSTRACT

Many studies on women's group-based development interventions raise important questions on the heterogeneity of impacts caused by differences in group functioning, the sustainability and evolution of groups and the characteristics that differentiate those that are self-reliant and capable of being agents of social change. This study aims to lay the framework for a multidimensional metric that is informed by theory and the current role played by women's groups, determined by established methodology and validated by data. Three potential indices and the best weighted index score are identified based on traditional reliability and validity tests conducted on using cross-sectional group level data from a survey of 170 SHGs in Odisha, India. The main contribution on the identified index is in enabling comparisons of SHGs promoted by different SHPIs in different contexts and thus opens up the possibility of effective consolidation of existing programs and groups, as is being attempted in countries like India. Given its multidimensional nature, the index developed in this study allows scope for further validation, refinement and expansion to suit multiple needs.

## **BIOGRAPHICAL SKETCH**

Samyuktha Kannan holds an Integrated Master's in Economics from IIT Madras, Chennai, India, and has over 7 years field experience researching financial access, food security and agricultural production in various capacities.

Dedicated to the district PLA officials of Shakti Varta and all last mile  
functionaries in development who are incredible reservoirs of knowledge and  
determination. I hope my research is always worthy of their effort.

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## CHAPTER 1

### INTRODUCTION

Over the past two decades, financial inclusion through microfinance has been at the fore of development policy discussion. Pioneered by the Grameen experiment in Bangladesh in the 1970s, microfinance through group-based joint liability lending is considered to be one of the most effective ways to address issues of compliance and collateral in lending to the poor. Grameen model replications and other modified versions such as bank-linked Self-Help Groups (SHGs) exploded in a number of countries, especially between 2000 and 2011, when the global lending portfolio grew at an average compound annual growth rate of 39% from \$2.2 billion to \$80 billion (Roodman, 2013). By 2013, approximately 211 million borrowers were reached by more than 3700 institutions around the world with both government and donor as well as commercial funding (Reed et al., 2015). Microfinance lending has focused primarily on women, who are seen as more equitable spenders and responsible borrowers and bear a disproportionate burden of poverty (Bank, 1990; Khandker, 2005; Kevane and Wydick, 2001). Women of the urban and rural poor who are empowered by financial access and organized as joint-liability or mutual solidarity groups, are increasingly being viewed as agents of social change around the world.

The initial spread of the microfinance movement coincided with academic and policy debates in the 80s and 90s on the effectiveness of international aid and top down structural adjustment (Mansuri and Rao, 2004). Social scientists such as

Chambers, Putnam and Ostrom emphasised the potential of community-led participatory development to resolve inefficiencies of markets and Government in the creation and governance of local goods and public institutions (Chambers, 2014; Putnam, 1995; Ostrom, 1998). In addition, there was recognition of the need for development programs that could eventually function without public or donor support and funding (Bennett et al., 1996). In an effort to ensure the long term impact and self-sustainability of financial inclusion, financial intermediation was supplemented with social intermediation. To date, microfinance providers in conjunction with governmental and non-governmental organizations commonly involve borrowers in skills-training, capacity building and community development programs. Organizations such as the Self Employment Women's Association (SEWA) in India have enabled women borrowers to channel credit into productive investments and develop financial independence. NGOs like BRAC, CARE, World Vision, MYRADA and others also provide development assistance in the areas of health, nutrition, education and gender to affiliated women's groups.

Since its first forays, the impacts of microfinance have been evaluated and re-evaluated repeatedly, receiving contradictory verdicts and mixed reviews from academics and practitioners alike. While some studies estimate large positive impacts on physical and human capital (Pitt and Khandker, 1998; Karlan and Zinman, 2009; Deininger and Liu, 2009b), others demonstrate little to no impact on borrowers (Morduch et al., 1998; Roodman and Morduch, 2014; Banerjee, 2013). Despite improvements in establishing empirical causal relationships through the use of randomized evaluations, few studies allow for or investigate heterogenous

program impacts and implementation hurdles Deininger and Liu (2009b); Armendáriz and Morduch (2010). Microfinance institutions and development partners often rely on anecdotal evidence and internal audits for their own monitoring and evaluation rather than systematic and standardised enquiry into successes and failures. As a result, there is a lack of clarity on the mechanisms of engagement between microfinance institutions and women's groups, group functioning and sustainability, and the differential impacts they generate.

Although questions have been raised about the effectiveness of microfinance in alleviating poverty, implementing better management and accountability in microfinance institutions and developing best practices for creating and managing women's groups can strengthen their role in community development (Roodman, 2013). With millions of borrowing groups already present in remote areas across the world, a network of efficient groups can be leveraged towards the attainment of developmental goals and service delivery of basic amenities (Casini and Vandewalle, 2011; Saha et al., 2015; Leatherman and Dunford, 2010). Increasingly in countries like India, women are being involved in programs to tackle malnutrition, promote healthcare and sanitation practices, undertake public works and resolve local domestic and community conflicts. Efforts are also underway to federate groups in order to encourage self-governance and catalyse participatory development and collective action.

Building systematic evidence not just around the impacts of group membership and financial access, but also the process of group formation and function-

ing thus has high policy relevance. However, the multitude of metrics used and the highly customized nature of evaluations have rendered comparison between groups from different promoting institutions difficult. Internal evaluations by microfinance institutions and other group promoting institutions such as NGOs, donors and Government bodies rank groups on criteria such as credit rating, administrative and savings discipline, and participation of members focusing more on operational efficiency rather than the creation of groups with a potential for collective action (Isern, 2007; Raja Reddy and Reddy, 2012; Fernandez, 2005; AP-MAS, 2014). Other studies attempt to identify characteristics of successful groups defining success on a relatively narrow basis of longevity, inclusiveness or repayment of loans (Baland et al., 2015; Bennett et al., 1996; Parida and Sinha, 2010).

The creation and validation of standardised metrics to monitor overall group functioning would enable organizations to evaluate pre-existing groups across different promoting institutions and across specific program contexts. Additionally, in light of recent expectations placed on these groups, a definition of SHG success that encompasses a multidimensional characterization of group performance would be more informative than narrow or single indicators that have been used thus far.

This study attempts to lay the groundwork for the creation of standardised metrics for women's groups, particularly women's Self-Help Groups (SHGs). The study draws from insights of theories on organizational behaviour and institution building, as well as a comparison of different evaluation tools to develop a multi-

dimensional framework for the evaluation of SHGs. The study then seeks to formalize a multidimensional metric by employing techniques used in poverty measurement and psychometry to create and evaluate an index using cross-sectional group level data from a survey of 170 SHGs in Odisha, India. It identifies areas for improvement of the metric and suggests future steps towards its validation. The following chapter provides an overview of the context and history of microfinance based group evaluations and also provides the theoretical background for the multidimensional depiction of SHG performance. Chapter 3 details the methodology used to create and evaluate the hypothesised relationships within the multidimensional framework. Chapter 4 provides a brief descriptive profile of the data and chapter 5 presents the results. Chapter 6 details the further steps necessary to validate the metric and presents some insights for future research.



## CHAPTER 2

### LITERATURE REVIEW

Self-Help Groups (henceforth SHGs) and other membership based civil society organizations such as cooperatives, unions, risk-sharing groups, producer groups, resource-management groups, clubs and local governing bodies place communities in charge of determining their own development trajectory and are thus central to the participatory approach to development. The literature review provides a brief review of the history of SHG based interventions and situates their growth in popularity within the context of participatory development. By doing so, it attempts to provide a background for developing a better understanding of the expectations placed on SHGs and the components of SHG performance. The review concludes with an overview of empirical evaluations of SHGs and similar organizations and a note on the contribution of the paper to addressing gaps in evaluation.

The term participatory development has been used to describe the incorporation of 'local knowledge and preferences in the decision-making processes of governments, private providers and donor agencies' in development policy (Mansuri and Rao, 2004). The approach rose to prominence in the late 1980s and 90s as large-scale top down structural adjustment policies and aid disbursement oriented towards increasing agricultural and industrial productivity proved ineffective in tackling poverty and other socio-economic issues in developing countries. Academic critique has targeted the environmental and social costs of central-

ized donor-driven policies and emphasized on the strengths of local knowledge and the benefits of civic engagement in resolving government and market failure (Chambers, 2014; Cernea, 1985; Escobar, 2011).

The importance of the participatory approach was established in seminal theories supporting a “people-centric” or “human” idea of development such as those of Schultz, Putnam, Ostrom and Sen. Schultz (1961) and Becker (1962) led early work in recognizing the effect of accumulation of ‘human capital’ in the form of skills and knowledge in increasing human productivity. Along with human capital, ‘social capital’ in the form of social relationships between friends, family and acquaintances too was recognized as an asset capable of generating returns (Putnam, 1995; Coleman, 1988; Hanifan, 1916). In the context of development, these theoretical contributions popularized the idea that non-monetary assets and social networks can be crucial in mobilizing collective action and enabling populations to rise out of poverty (Woolcock and Narayan, 2000). With Sen et al. (1999) and Nussbaum (2001), poverty came to be viewed as a deprivation of basic ‘capabilities’ that is not adequately captured by its measurement in terms of income. The mechanisms of how ‘collective action’ can resolve social dilemmas and market failure were formalized primarily in the work of Ostrom (1998). Ostroms theoretical framework and the experimental work of many social scientists have suggested numerous factors affecting the evolution of group norms and the role of trust, reciprocity and reputation in the way communities manage common resources. Following these insights, development programs were reoriented towards decentralization of planning and accountability by non-governmental

agencies initially and then by multilateral agencies and donors towards the end of the 20th century (Brett, 2003).

In the last two decades, The World Bank, UNDP and OECD etc have directed significant funding to community based initiatives and encouraged governments and donors around the world to partner with civil society groups (Bank, 2001, 2004). Under the new discourse there has been a widespread adoption of the Human Development Index, Millennium Development Goals, PLA/PRA methodology for development planning, community mobilization efforts especially in health and nutrition, and other inclusive interventions. Many of these initiatives have since borne results. Evaluations have showed the coming together of communities is associated with improvements in property rights, labor market outcomes, public investments and financial access (Desai and Joshi, 2014; Bardhan, 2005; Ostrom and Hess, 2007). Evidence also shows the positive effects of strengthening in trust and social networks on health, mortality, education and child welfare (Harper, 2001; Kawachi et al., 1997; Wilkinson et al., 2002; Putnam, 1995; Coleman, 1988; Healy and Côté, 2001). Physical capital in the form of irrigation and other infrastructure too has benefited from community participation (Narayan, 1994; Uphoff and Bruton, 1992). One of the biggest successes of community involvement has been in the area of financial inclusion.

## **2.1 Women's Self-Help Groups in participatory development**

Self Help Groups (SHGs) are typically groups of women who are organized as borrowing entities in participatory interventions focused on financial inclusion. They have their origin in the microfinance revolution of the 1980s, a system of banking pioneered by small and largely non-governmental initiatives, the most famous of whom is the Grameen Bank in Bangladesh. Microfinance, understood broadly as the provision of "small scale financial services " primarily credit and savings by formal and sustainable institutions, created a revolution in development finance by simultaneously providing a solution to the information asymmetry problem in banking and strengthening social capital (Robinson, 2001). Microfinance institutions, banks, governments and civil society organizations offer small loans to groups of women borrowers who are mutually responsible for their repayment, thereby creating a system of inter-dependence between individuals and making use of peer monitoring to minimize the risk of default. This system has proved to be extremely effective in resolving the problems formal lending institutions face in 1) ascertaining riskiness of borrowers (adverse selection), 2) ascertaining the riskiness of projects to which credit is directed by borrowers (moral hazard), 3) monitoring returns from these projects (auditing costs) and 4) collecting debt (enforcement) (Ghatak and Guinnane, 1999). For borrowers, the gains from improved access to liquidity outweigh the costs of the increased risk due to independence, thus increasing their welfare (Stiglitz, 1990).

SHGs are a particular version of microfinance borrowing groups most popular

in South and South-East Asia (Brody et al., 2015). Groups are made up of 10-20 women from the same location who are encouraged to engage in regular voluntary savings and make interest-bearing loans from the pooled saving to each other in times of need. SHGs are typically formed or promoted by a governmental or non-governmental organization but are linked directly to existing financial institutions for savings and external loans. This framework differs from the Grameen model in that it does not necessitate the creation of an MFI as a financial intermediary, allows considerable autonomy to the group to determine the scope of their activities and involves relatively less rigid contracts between the different stakeholders (Baland et al., 2011). The SHG model and the autonomy it offers to women has become especially relevant after traditional forms of microfinance underwent a rapid rise and fall in the early 2000s.

Traditional microfinance, which predominantly involved microlending by MFIs without thrift, initially burgeoned on the heels of the success of the Grameen bank in maintaining a 98.6 percent repayment rate and in generating substantial profits (Yunus, 2007). Some similar MFIs like SKS in India and Compartamos in Brazil were even able to raise capital of their own from initial public offerings (IPOs) and opened the doors for the inflow of capital and formal banking sector funds towards under-served populations. The pressure to maintain commercial viability at scale prompted these institutions to resort to higher and higher interest rates, unethical methods to keep up the repayment levels and compromise the quality of management (Armendáriz and Morduch, 2010). Cross-lending by different lenders buried individual borrowers in debt traps, sparking widespread

public criticism and government intervention in many parts of the world. Profound skepticism and caution regarding the benefits of microfinance grew among academics, policymakers and investors leading to the near collapse of the industry in some parts of the world. Despite the rapid rise and fall of microfinance, the lessons learned prompted a second wave of microfinance that seeks to build on the strengths of the decentralized group-approach with a focus on capacity building through finance rather than mere financial access (Robinson, 2001). At the center of this second wave was the promotion of SHGs and an expansion of their role to encompass participatory development and enhancement of capabilities of the poor.

SHGs in their unique position as savings and credit groups with considerable autonomy in functioning and scope were able to avoid the unsustainability of rigid institutional governance and narrow lending practices. Especially after the “microfinance crisis” (Armendáriz and Morduch, 2010), SHG promoting institutions embraced the poverty reduction approach (terminology used by Robinson (2001)) i.e the potential for financial access to reduce poverty when combined with services such as skills training and the delivery of basic amenities, health and education interventions. The SHG model was also envisioned to inculcate aspects of financial discipline among present-biased individuals (Bauer et al., 2012; Ashraf et al., 2006; Tanaka et al., 2016; Binswanger, 1980), in documentation, prioritization of needs and enforcement of terms as groups engage in independent saving and lending operations with their own earnings (Harper, 2002). Additionally, the peer monitoring aspect of these groups inherently utilizing and building new social

capital (Ghatak and Guinnane, 1999; Feigenberg et al., 2010). Groups are eventually expected to build enough capacity and credibility to be eligible to apply for loans from formal banks, although they are not mandated to go through all of these stages if members decide not to do so.

SHGs are in spirit free to determine the scope of their activities outside the specified common responsibilities, however there are expectations of them from various stakeholders the State, the Self Help Group Promoting Institution (SHPI), banks, local government, the community they live in and the members themselves. SHGs differ significantly from one another depending on the promoting institution that governs their formation and development, and can have additional responsibilities of service delivery, awareness generation and civic activism in areas such as health, education and gender as encouraged by their promoting institution. While some institutions (BRAC, BRI) were engaged in these activities even prior to the 1990s, the past decade has seen a more widespread adoption of the full breadth of financial services available to mitigate risks and a recognition of the potential to leverage the social capital within these borrowing groups towards participatory development.

## **2.2 SHGs in India**

SHGs have a particularly long history and widespread influence in India as compared to the rest of the developing world. The term Self Help Group was first

made use of by the Reserve Bank of India in 1991 as part of a strategy to encourage priority sector and rural lending and revive failing public poverty alleviation programs such the Integrated Rural Development Program (IRDP) (Armendáriz and Morduch, 2010; Baland et al., 2008). The strategy, which was governed by the National Bank for Rural and Agricultural Development (NABARD) in partnership with a few NGOs, began with a pilot , linking 500 SHGs to a dozen formal banks in 1992 (Harper, 2002). Groups were soon promoted by a variety of institutions such as NGOs (such as MYRADA, ENABLE, CARE, PRADAN, BASIX, SEWA), micro-finance institutions and Non-Banking Financial Companies (NBFCs), and Government Ministries (especially the Ministry of Rural Development and the Department of Women and Child Development ). Government promoted groups in particular saw a boost in growth after SHGs received policy impetus in the Ninth (1997-2002) and Tenth Plans (2002-2007) (in Community and Environment, 2008) upon skepticism regarding the private microfinance industry. A smaller proportion of groups were set up by commercial banks, local civil society organizations and individuals. With the introduction of country-wide welfare schemes such as the Swarnajayanti Gram Swarozgar Yojana (SGSY) in 1999 (and the National Rural Livelihoods Mission in 2014), SHGs also came to be identified as intermediaries and beneficiaries of self-employment and public provision programs. Now called the SHG Bank Linkage Program (SHG-BLP), the program currently covers 6.6 million women SHGs around the country and around 84 million households (APMAS, 2014).

Indian SHGs much like other microfinance networks almost exclusively fo-



cus on women, who are considered to bear a disproportionate burden of poverty and deprivation (Dreze and Sen, 2002), be more equitable spenders of income (see Hoddinott and Haddad, 1995) and be more trustworthy borrowers (see Armendáriz and Morduch, 2010, p 179-195). Among government promoted SHGs, impetus was also given to the formation of caste-homogenous groups focused on the inclusion of Scheduled Castes, Scheduled Tribes and other deprived castes (Desai and Joshi, 2014). As membership based organizations of the poor with the potential for collective action, SHGs are increasingly being considered as intermediaries in policies aimed at rural poverty reduction, health, education and womens empowerment (Saha et al., 2015; Leatherman and Dunford, 2010). The Government of India already involves SHGs towards decentralized delivery and regulation of crucial public provision programs. Groups interviewed in this study were involved in preparation of the Take Home Ration for local Anganwadi Centers (Integrated Child Development Scheme), inspection for quality of Mid-day Meals served in schools, retailing of LPG cylinders, collection of electricity bill payments, Forest department public works, cleaning of village common resources such as wells, tanks and roads, toilet construction and hygiene delivery as part of the Total Sanitation Campaign, polio immunization drives and Severe Acute Malnutrition (SAM) referrals, anti-alcohol and anti-domestic violence campaigns. In recent years efforts have been made to federate SHGs in order to encourage self governance and to give them a stronger political voice (APMAS, 2014). In large scale government programs such as '*Shakti Varta*' in the context of this study too bring together SHGs promoted by different organizations to work on common

issues.

In reality however, as the Planning Commission of India reports, many SHGs are not stable and do not last till they can attain maturity or self sustainability, and income generating activity undertaken by the group often gets fragmented or exists only on paper (in *Community and Environment*, 2008). Lahiri-Dutt and Samanta (2006) caution against excessive reliance on group based approaches by drawing attention to the evidence of intra-group discordance, lack of communication and information flow and capture by male family members. Conducting rigorous evaluations of group behavior and developing improved indicators for measuring performance can thus inform future program design and governance of self help groups in development policy.

### **2.3 Characterizing SHG Performance**

The multitude of stakeholders and contexts that determine the groups capacity for and commitment to community development, make it especially challenging for researchers to assess the impact and the functionality of Self Help Groups compared to traditional microfinance groups. There is a lack of apparent consensus on a definition for group success or an indicator of group performance. Most studies on the effectiveness of SHGs view them solely in the context of microfinance and measure success through financial indicators such as repayment rates and return on investments (Bennett et al., 1996). However, this does not do justice

to the gamut of expectations and roles that SHGs have assumed in recent years. Others that incorporate a wider range of duties in evaluation are often contextualized and not comparable. In order to provide a more complete and comparable evaluation, it is important to derive standards from collective action that can be generalized across groups promoted by different institutions and indicate the potential for a group to become an agent of social change in its locality. An attempt to define a general definition of success across all SHGs comes from literature on membership based organizations of the poor, a formulation of (Chen et al., 2006).

### **2.3.1 ‘Membership based organizations of the poor (MBOPs) ’**

The term ‘membership based organizations of the poor’, first mentioned in a conference organized by Cornell University, Women in Informal Employment: Globalizing and Organizing (WEIGO) and the Self-Employed Women’s Association (SEWA) in 2005, tries to distinguish civil society organizations such as SHGs from the general focus on NGOs. MBOPs as defined by the conference organizers encompass all civil society organizations “whose governance structures respond to the needs and aspirations of the poor” (Chen et al., 2006), such as cooperatives, trade unions, self help groups and campaigning organizations. Membership based organizations differ from NGOs primarily in their democratic governance structure, the benefits of which are “internal accountability” to members and “external legitimacy” in their locality Chen et al. (2006). Further, the definition of MBOPs requires that the constituent members joined on a voluntary basis

and have collectively defined their own objectives and decision making structures (Crowley et al., 2007). An important feature of the groups is their exclusive involvement of the poor, which enables traditionally weakly organized communities to represent themselves in interactions with the market and government. MBOPs thus become crucial stakeholders in participatory development policy.

SHGs due to the autonomy in self-governance and adoption of wider mandates accorded to them, adequately lend themselves to definition as 'membership based organizations of the poor (MBOPs)' capable of being recognized independently of institutions that form or lend to them (Tiwari and Thakkur, 2007). Such a definition provides clarity on the nature of organization of SHGs and enables better evaluation of these groups in terms of both functioning and impact. The enumeration of indicators of success in MBOP literature (compiled in Chen et al. (2006)) provides a starting point in developing a theoretical background for the evaluation of SHGs.

In defining success for all MBOPs in general, Crowley et al. (2007) emphasize on the achievement of goals and impact as well as functioning. An important classification is made in Roever et al. (2005) distinguishing expectations placed on SHGs as pertaining to internal aspects ie in enabling members to attain mutually agreed upon goals according to mutually agreed norms, and the external aspects ie in taking an initiative to engage in policy and successfully voicing the views of the traditionally underrepresented. This classification is useful as it recognizes both the groups role as an organization composed of individuals as well as the

wider mandate adopted by these groups and agents of social change.

### **2.3.2 Dimensions of performance**

The various dimensions or components that make up performance are derived from literature on MBOPs, institutional formation, organizational behavior and collective action, interpreted in a manner that utilizes and provides insights specifically on group-level information as per the scope of the study.

#### **Internal**

Organizational success in voluntary associations has generally been viewed in terms of organizational efficiency and accountability, based on factors that are “internal” to the organization. Roever et al. (2005) identifies the constituents of internal success to include capacity building and fostering of debate among members, and the achievement of stated goals. Achievement of group goals typically necessitates the adherence to group regulations and norms such as in governance and financial discipline, internal and external accountability. Other indicators of success used in studies of microfinance and SHGs, such as the retention or expansion of membership and financial/managerial self reliance (Crowley et al., 2007), group lifespan (Walker and McCarthy, 2007), representation of minorities (Baland et al., 2008) also signify “internal” success.

The difficulty in defining common standards of “internal” success in SHGs is

Table 2.1: Common Agenda of SHGs

- 
- 1 SHGs had a name and a recorded membership
  - 2 They changed their leaders regularly
  - 3 Books (minutes of meetings and accounts) were maintained and audited
  - 4 They fostered the habit of saving (by giving up some non-essential consumption expenditure) and adding the amount weekly to the groups common fund
  - 5 They lent from their savings for at least six months prior to receiving a bank loan;
  - 6 They received adequate institutional capacity-building training and mentoring
  - 7 The common fund of each SHG comprised regular savings, and loans were given regularly (the amount of interest was used as an indicator); fines were levied for dysfunctional behaviour (this related to discipline in participating in meetings and in finance management); and evidence of fines was taken as a positive sign that discipline was given importance
  - 8 They had taken action to foster change to promote better gender relations; they had put a priority on education, especially of girl children; they had taken action to reduce wasteful expenditure, especially by their husbands; they had mobilized to promote equity and had lobbied governmental and Panchayat Raj institutions for better services and more transparent management
- 

*Source: (Fernandez, 2005)*

challenging as group regulations and norms differ from one Self Help Promoting Institution (SHPI) to another. However, there are some basic responsibilities undertaken by these groups in most contexts. These are delineated in 2.1 as identified by MYRADA, an NGO and one of the oldest promoters of SHGs in India.

To further understand the relationship between group regulations and norms and organizational success, insights from the rational choice and extended behavioral and bounded rationality theories of social institutions built by Ostrom (1998)

and Calvert (1995) are particularly useful. Despite the distinction Crowley et al. (2007) make between MBOPs as organizations and institutions, the fundamental game theoretic solutions that need to arise in any group for it to sustain and engage in the process of collective action remain the same. These include the two basic requirements of institution building named by Calvert (1995) as cooperation and coordination. We make use of this distinction to help us identify the set of potential indicators of “internal” success.

### *1. Cooperation*

Cooperation is said to exist when individuals follow the rules of the game and abide by mutually agreed norms. For example, SHGs succeed as borrowing groups only when members are willing to cooperate to adhere to their repayment schedules and contribute regular savings. In the governance of SHGs, individuals must relinquish leadership positions in order for there to be rotation and adequate representation in executive roles. Voluntary activities of the SHG, including those that do provide monetary incentives such as income generating activities and those that don't such as public service activities, especially require cooperative behaviour according to Calvert, as members adhere to norms that are not binding, and a socially defined notion of honor. While Ostrom identifies indicators of cooperation in trust, reciprocity and reputation among individual members, group level indicators of success would include member adherence to common norms such as attendance, participation in activities and decision-making and awareness among members of group norms and duties.

## *2. Coordination*

Coordination is said to exist when cooperation between individuals is leveraged towards a common goal or action. As Calvert (1995) mentions, even if the problem of cooperation has been solved, the achievement of group goals requires coordination between members in order to choose between several desired outcomes and identify appropriate roles and allocate roles among themselves. This is unlikely to occur in a group without deliberation, discussion, guidance and practice. Therefore the role of the SHPI and supporting organizations is also important in translating cooperation into deliverable outcomes. The accomplishment of activities, agreement on outcomes and amicable resolution of conflicts without attrition would therefore indicate coordination success.

### **External**

Just as internal standards of success can benefit from an understanding of the dilemmas of social choice, external standards for success are informed by a better understanding of the outcomes of collective action. An SHG might be considered successful if it fulfills its role as an MBOP by representing the voice of the underprivileged in policy (Roever et al., 2005). Nevertheless, the stakeholder credibility of an SHG is built slowly through engagement with members of the community and involvement in particular policy initiatives.

#### *1. Engagement Experience*

While achieving policy favorability might be a long term indicator of success,



the potential for collective action is evidenced by group engagement with other stakeholders in society such as other SHGs, the SHG Federation and the community at large. By doing so the group gains external recognition and a stronger leverage in policy discussions.

## *2. Program Specific Experience*

Both coordination and external accountability are built through practice and reputation. Therefore, prior experience in a given policy area makes an SHG more likely to achieve outcomes in that area.

The theories underlying collective action and social institutions are also effective in formally understanding some of the underlying determinants of performance in these groups. Group characteristics such as size and heterogeneity, individual characteristics such as discount rates affect the trust, reciprocity, reputation, and communication potential needed for individuals to work together . Ostrom (1998) mentions the effect of organizational structure, monitoring and information availability are other influences.

## **2.4 History of Impact and Process Evaluations of SHGs**

Given the origins of the SHGs in traditional microfinance interventions, empirical evaluations of microfinance programs and borrowing groups are often used to make inferences about SHGs and vice versa (for instance in Brody et al. (2015)).

There are few quantitative and qualitative studies focusing specifically on the SHG model according to its generally specified definition (refer section 2.1 ). Just as internal and external dimensions together constitute SHG performance (Roever et al., 2005), process and impact evaluations of SHGs or microfinance groups are complementary in facilitating a better understanding of group-based interventions.

While process evaluations concentrate on the implementation and functioning of an SHG or microfinance program based on the programs theory and planning (for eg. the reach and composition of groups, the capacity of groups to fulfil its responsibilities, management of finances within the group, repayment discipline, investments, participation etc), impact evaluations are concerned with the outcomes and progress towards goals such (for eg. reduction of poverty, womens empowerment etc). Program monitoring and process evaluations are extremely useful in interpreting the results of impact evaluations and are informing future policy and implementation decisions (Gertler et al., 2011). In the context of self help group assessments, although impact evaluation studies have overcome significant empirical challenges and have informed the policy, contradictory findings and heterogeneous impacts of programs are not adequately explained by supplementary process studies as yet.

### **2.4.1 Impact evaluation**

Impact studies of microfinance and womens self help group programs that have been conducted thus far have differed in empirical strategies used as well as the results. Earlier studies such as Pitt and Khandker (1998), which showed large positive impacts on annual consumption expenditure, were criticized for not adequately dealing with selection bias, attrition bias and reverse causality among other issues (Roodman and Morduch, 2014; Morduch et al., 1998). Armendáriz and Morduch (2010) express the reservation that no matter the outcome of interest, it is difficult to separate causal impacts of microfinance exposure as borrowers are systematically different from non-borrowers as demonstrated by Coleman (2006); Hashemi (1997). Later studies have attempted to use longitudinal, experimental or quasi-experimental methods to more rigourously establish relationships between microfinance and its direct impacts on investment and consumption behaviour. Studies measuring impacts on access to formal credit, dependence on moneylenders, employment, investment and productivity, response to risk, durable and non-durable consumption expenditure, intrahousehold reallocation and total incomes, are less optimistic about the size of gains from microfinance but acknowledge the influence of good policies and implementation (Kaboski and Townsend, 2011; Karlan and Zinman, 2009, 2010, 2011; Banerjee et al., 2015; De Mel et al., 2009; Dupas and Robinson, 2013; Angelucci et al., 2013; Augsburg et al., 2012; Anderson and Baland, 2002). The estimates of indirect impacts, however, on womens bargaining power and mobility (Pitt et al., 2006; Swain and

Wallentin, 2009; Kandpal et al., 2013), health and nutrition (Rosenberg et al., 2011; Deininger and Liu, 2009b), social capital and political empowerment (Deininger and Liu, 2009b; Desai and Joshi, 2014; Pitt et al., 2006) and subjective well being indicators (Kim et al., 2009; Pronyk et al., 2006) are mostly positive. There is a degree of comparability among both outcome indicators as well as estimation methodology that makes it easier to synthesise and conduct meta-analyses (such as Brody et al., 2015).

## **2.4.2 Process Evaluation**

Process evaluations on the other hand are much more customised to the practitioners needs making comparability across programs difficult. Moreover, only few studies attempt to estimate the sources of variation in the efficacy of SHG programs and constituent groups. While interpreting impact evaluation results, the functionality of groups is assumed to generally abide by economic contract theory and principal-agent theory (Armendáriz and Morduch, 2010).

Conventions in monitoring and process evaluation have better developed in those aspects essential to the goal of financial sustainability. For example, operational and financial self-sufficiency ratios at the institution-level and credit rating scores/eligibility criteria at the group level are commonly used in multiple microfinance programs (Armendáriz and Morduch, 2010). The aspects that are essential to the goal of poverty reduction and the wider agenda of microfinance are

more difficult to define and measure. Nevertheless, APMAS CRI+ tool and large number of NGOs in India have developed their own performance measures that incorporate financial sustainability as well as other organizational features that are necessary to fulfil the wider agenda. These summary measures are used primarily to score and/or rank groups to facilitate internal monitoring rather than explain performance. The indicators used vary from program to program and the inclusion of indicators is not explicitly justified and perhaps based on experience. Some development institutes such as the World Bank have provided guidelines for practitioners on measurement of performance (Krishna and Shrader, 1999). The indicators most commonly used include member demographics, group composition, age and size, administrative performance (such as meeting attendance, division of responsibilities, participation in decision making and documentation) and financial performance (such as savings, loans, repayment history and profitability, see Appendix 2).

Further, some studies have attempted to identify the sources of variation in performance indicators of interest, commonly group lifespan and repayment rates. In measuring lifespans, Baland et al. (2008) estimate that lower castes and landless farmers in caste heterogeneous groups are more likely to leave groups, indicating the positive negative effect of group heterogeneity on performance. Likelihood of attrition is also higher among members with lower education levels and when members of the group are not related to other members. Deininger and Liu (2009a) find that stringent monitoring of groups and high repayment frequencies raise repayment rates. Qualitative and statistical studies also find differences

between groups promoted by different self help promoting institutions in the context of leadership and collective action (Bharamappanavara et al., 2014), outreach, financial performance and administrative performance (Bennett et al., 1996).

As the discourse of participatory development strengthens in countries like India and the self help groups formed over the last two decades mature, there is a need for standardised performance measures that can fulfil the requirements of new policies involving self help groups. Standardised and easy to measure performance metrics will enable Governments and development practitioners to evaluate groups promoted by different institutions in a comparable manner, identify groups best suited to function as intermediaries or policy stakeholders and better utilize their strengths. By supplementing information from impact evaluation studies, these metrics can also provide insight into the success and failure of SHG programs and address some of the questions raised regarding the suitability and sustainability of these groups under different contexts. In this paper, I attempt to develop a performance metric for womens self help groups based on theoretical background from literature on collective action and group behaviour, best practices from practitioner evaluation tools and empirical relationships from a survey of 170 SHGs from Odisha, India.

## CHAPTER 3

### METHODOLOGY

#### 3.1 Study Context

The survey sample of groups in this pilot study was chosen from the beneficiary SHGs of a flagship development initiative of the State Government of Odisha, funded by DFID (UK), under the Odisha Health and Nutrition Sector Program. Odisha, a hilly and forested state on Indias east coast, is one of 3 worst performing states in India in terms of child mortality including under-5 mortality, infant mortality and neo-natal mortality rates, despite experiencing a remarkable decline in these rates from 1990 (UNICEF, 2011). Maternal mortality rates are among the highest in India and lack of nutritious food, adequate physical rest and social stigmas have been attributed as the biggest impediments to development (Planning Commission, 2012).

The State Governments initiative named Shakti Varta (translated both as ‘women’s voice’ and ‘powerful voice’) is an intervention targeted at facilitating community processes through a tested Participatory Learning and Action framework Tripathy et al. (2010) towards improving maternal and child health among the rural and predominantly tribal population. Launched in April 2013, the program covers 15 high burden districts in the state (Thomas et al., 2015). A database of SHGs from Mission Shakti (the state governments program for SHG gover-

nance) was utilized to generate critical interest in the program. Additionally, funds flow for implementation was directed through the decentralized SHG federation network. A real-time Management Information System (MIS) recorded SHGs who attended program sessions. These databases of SHGs provided the starting point for the sample used in the study.

## **3.2 Data Collection**

### **3.2.1 Sampling**

The sample was chosen in purposive random fashion from six districts - 3 pilot districts of Shakti Varta and 3 randomly chosen districts out of the remaining 12 high burden districts in Odisha. According to program officials, the process for choosing 3 districts as pilot districts too was random. In each district, 4 blocks and 3 GPs from each block were chosen randomly for the study. In the first round of surveys 1 Government-promoted group and 1 NGO-promoted group who had participated in Shakti Varta meetings were targeted from each GP. In addition, another SHG who had not participated in Shakti Varta meetings was targeted in each GP of the 3 pilot districts to facilitate a comparison between participants and non-participants for a separate program functioning study provided to Shakti Varta program officials. For this study however, we pool the entire sample of 170 SHGs (eliminating refusals) over 6 districts as described in Table 1. There were many in-



consistencies in the database maintained by the Government preventing us from getting an even split of Government-promoted and NGO-promoted groups. The final sample consisted of 64% Government-promoted groups, 29% NGO/MFI-promoted groups, 6% groups with both Government and NGO promoters and 1 group did not report their Self-Help Promoting Institution (SHPI). All groups were formed primarily as savings groups.

Table 3.1: SHG Sample by location

<b>District</b>	<b>Blocks covered</b>	<b>GPs covered</b>	<b>Govt-promoted SHGs</b>	<b>Non-Govt-promoted SHGs</b>	<b>Both</b>	<b>Did not report</b>	<b>Total SHGs covered</b>
	No.	No.	No.	No.	No.	No.	No.
Bolangir	4	12	19	12	2	2	35
Kalahandi	4	12	19	4	1	0	24
Kandhamal	4	11	23	6	1	1	31
Keonjhar	4	11	8	9	5	0	22
Koraput	4	12	18	6	0	0	24
Rayagada	4	12	20	12	2	0	34
<i>Total</i>	24	70	107	49	11	3	170

### 3.2.2 Survey Process

A focus group survey for SHGs was designed based on prior evaluations conducted by Shakti Varta staff to capitalize on familiarity and these were supplemented with questions from other SHG evaluation tools and questionnaires available in the public domain. The survey was developed with the purpose of conducting multiple analyses on SHGs and the effective of SHG performance on program outcomes. Sections in the survey included Group Constitution, Organizational Systems and Discipline, Financial Management and Performance, Goals and Objectives, Training and Objectives, Social Activities and Services, aside from questions on participation in *Shakti Varta* and self-reported changes since becoming a member (see Appendix 6). The survey tool was translated to the local language Odiya in which surveys were conducted. Enumerators and program staff of *Shakti Varta* were familiarized with the tool in a joint training session held in Bhubaneswar, Odisha. The survey was administered by enumerators over 3 weeks in July 2015, to the sample. A minimum of three members of an SHG, including an executive member such as the President, Secretary or Treasurer who had access to the books and sufficient knowledge of group practices were required to be present. The information gained from group surveys were supplemented with focus group discussions with SHG Federation members at the Block Level and District level government officials, as well as surveys of *Anganwadi/ICDS* workers involved in the promotion of women and child nutrition in rural areas. Summary statistics of measured variables profiling groups in the sample are compiled in

Appendix 2 and detailed in the following chapter. Wherever possible, surveyors made attempts to inspect documentation maintained by the group, however most of the information was self-reported.

### **3.3 Empirical Methodology**

#### **3.3.1 Multidimensionality of SHG performance**

A representation of group performance given the characterization in Roever Roever et al. (2005) must include internal aspects of group functioning, adherence to norms as well as external aspects of engagement with development policy in order to completely represent the role played by SHGs in participatory development. Internal aspects of performance can be further understood as being comprised of cooperation between members according rules and regulations and coordination towards goals and activities. All of these aspects can vary greatly from one context to another Chen et al. (2006), depending on the norms and conventions laid out by the Self Help Promoting Institution, the goals of the members themselves and the enabling environment or incentive structure under which the SHG operates. Given the multiplicity of aspects of performance and the diversity of expected outcomes, the measurement of SHG success cannot therefore be captured by a single indicator.

Methodologically, a dimension represents the “highest hierarchical level of

analysis and indicates the scope of objectives, individual indicators and variables "Munda and Nardo (2009). A multidimensional representation allows researchers to better portray abstract concepts by assimilating the insights provided by multiple components of the concept and its underlying indicators. Theoretical constructs in social development that exhibit similar complexity of definition - such as social capital and poverty - have been recognized for the challenge they pose for measurement due the number of indicators that embody them Narayan and Cassidy (2001); Paldam (2000); Foa and Tanner (2012); Alkire and Foster (2011). In empirical research, researchers have developed interpretable metrics by unpacking the definitions of these concepts and identifying the most representative manifestations of each dimension that constitutes them. For example, the measurement of poverty has embraced evolving definitions of the expectations from human life, drawing on the background of 'human development', 'capabilities approach', the millennium development goals and extensive evidence Alkire and Foster (2011). Newer and more "direct" poverty measures (such as Morris PQLI, Sens HDI, Alkire Fosters MDPI) are designed to capture "deprivations of different kinds" Sen (1993), such as health, education and standard of living which are not adequately represented by "indirect" indicators such as income . Social capital too has found consistent representation as a multidimensional concept in the World Values Survey, Barometer of Social Capital and Global Social Capital Survey and Social Capital Integrated Questionnaire Narayan and Cassidy (2001), incorporating questions and games on trust, reciprocity, memberships and engagement with networks and civil society.

In SHG group performance, credit ratings, repayment rates and expanded versions of credit ratings have been used as an “indirect” measure of group performance by researchers studying determinants of performance. The accuracy of performance measurement can be improved by incorporating additional and theoretically and empirically informed indicators that provide a more complete representation of group performance. In this study, we attempt to measure SHG performance using a multidimensional framework based on a groups ‘internal’ and ‘external’ aspects of performance, and further the evidence of ‘cooperation’ and ‘coordination’ within the group. A greater emphasis has been placed on developing insights regarding ‘internal’ aspects of group performance, enriching existing group level predominantly credit rating metrics and taking the first steps in formalizing process evaluations for group based interventions such as the formation of SHGs.

### **3.3.2 Composite indices in Social Development**

Indexing is a particularly useful way of measuring and representing complex phenomenon Hawken and Munck (2013) as they serve to summarize the information provided by multiple indicators. Through data reduction, indices offer substantial ease of interpretation Foa and Tanner (2012) and comparability. Due to their practical application, they have become increasingly important in the social sciences among academics, policy and research organizations and development practitioners alike. Composite indices now abound in the areas of poverty and human de-

velopment, equality, gender and governance. For example, recent years have seen the adoption and popular use of the Human Development Index, the Gender Development Index, Gender Empowerment Measure, Social Institutions and Gender Index, the Worldwide Governance Indicators and the Ease of Doing Business Index and a host of other measures. An index however, only provides a useful representation when its construction has a sound theoretical basis and complies with methodological criteria. Failing this, an index has the potential to mislead or misinform users and does not solve the problem of multiplicity of indicators Saltelli (2007).

This study follows steps advised by Foa and Tanner (2012); Munck and Verkuilen (2002) towards the creation of a representative additive index of the SHG group performance. The multidimensional treatment of the index borrows from the Count Method of Alkire Foster Alkire and Foster (2011) which has been used in the creation of a multidimensional poverty index (MDPI) but is applicable to a wide range of concepts and indicators that are predominantly of an ordinal or categorical nature. In the formulation of Alkire and Foster Alkire and Foster (2011), the index value  $I$  is not a summation of the weighted values of the indicators themselves, rather a "count" of the indicators in a manner than renders within-dimension and between-dimension possible. The suggested SHG performance index borrows from the Alkire-Foster approach for index creation but differs from the Multidimensional Poverty Index or the Women's Empowerment in Agriculture Index (also created with the same methodology) in some ways.

- The SHG index employs a “positive” scoring and is designed to measure achievements, rather than deprivations
- The index is a “dual-cutoff” method since it defines cutoffs for indicators as well as for each dimensions. However, since there is less of a need to generate a headcount ratio for a given SHG population, an overall cutoff to measure the aggregate incidence of performance has not been attempted in this study.

In this sense, the SHG performance index generates an additive scale measure of performance but employs the multidimensional approach to defining indicators and analysis scores as employed in Alkire-Foster.

### **3.3.3 Empirical strategy and Nomological Network**

The “system of interlocking laws” that describes the multidimensional nature of SHG performance is referred to as its nomological network Cronbach and Meehl (1955). In order to establish that a set of observable indicators or an index adequately measure the abstract theoretical construct it seeks to measure, the nomological network surrounding the construct must exist. The empirical strategy followed seeks to identify and detail the nomological network by relating theoretical constructs to observable indicators, theoretical constructs to one another and observable indicators to one another.

With the objective of identifying the net, we first identify relevant indicators by comparing existing tools, theory and empirical relationships between variables. We then shortlist a set of indicators available in the data that are most suitable for index construction. A total score is computed for all SHGs in the analysis and then proceed to analyse the differences and determinants of the total score. In keeping with the logic of construct validity, the nomological net and indicators is modified to develop the simplest net that captures the relationships between dimensions and indicators.

The various steps in the analysis are detailed below.

### **Level of Analysis**

Throughout the analysis, the focus and unit of analysis remains at the group level. This was done so because of the ease of data collection for implementers working with groups and who are already used to collecting and monitoring group level indicators. Additionally, a group level picture serves well when supplemented with individual and household surveys designed to measure impact and member characteristics.

### **Selection of Indicators**

The conceptual background for measuring SHG performance is visualized in the manner of Munck and Verkuilen (2002) in 3.1 . The concept of SHG performance



is shown as being composed of internal and external components. The internal components are in turn comprised of the dimensions of cooperation and coordination, with the cooperation dimension functioning as catch-all terms for categories of evaluation found in tools reviewed. To provide a complete picture of the dimensions of cooperation, coordination and external engagement, care was taken to adequately represent the interpretations of different tools of the attributes within each dimension. For example, the 'cooperation' dimension incorporation indicators pertaining to organizational discipline (Sa-Dhan), organizational culture (World Bank) and systems and self-discipline (CRI).

The selection of the indicators for the tool is thus based on:

1. **Theoretical relevance:** The components and relationships that comprise group performance are derived from theories of collective action, institutions and organizational behavior as detailed in section (). Insights from evaluation guidelines of implementers and independent reports have also been used to identify the logic of evaluation.
2. **Use in prior evaluations:** The indicators and characteristics measured in the survey are based upon a comparison of internal evaluation tools used by microfinance institutions (eg. BASIX), NGOs (eg. MYRADA), regulatory bodies (eg. NABARD and APMAS) and international organizations (eg. World Bank). The corresponding tools from which indicators were derived from are also detailed in Appendix 1
3. **Data availability:** The tool is developed from indicators measured in a sur-

vey of 170 SHGs in Odisha, India, in 2015. Although the survey was designed in order to develop an evaluation of SHGs within a specific program context, the tool was not specifically designed to serve as the basis for a standardized tool for the evaluation of group performance as defined in this study. Hence the tool is constrained by the availability of indicators measured in the 2015 survey.

4. **Ease of measurement and minimization of errors:** The unit of analysis, methodology and survey tool was designed keeping in mind the ease of application under diverse contexts. Group level information not only provides crucial insight into the functioning of the programs organizational structure and regulations, but is also easier to gather data on as compared to household surveys. From the experience of Shakti Varta programme in Odisha, India, which was the setting for the survey conducted, group level studies are also easily integrable into MIS and routine monitoring and evaluation systems, thus ensuring availability of data are more frequent intervals. From fieldwork experience, care has also been taken to include variables for which there is a lower probability of self-report bias and for which information is verifiable or of an objective nature.
5. **Data distribution:** Indicators that did not show a sizeable variance and were highly skewed Babbie (2015) were not considered for the tool.

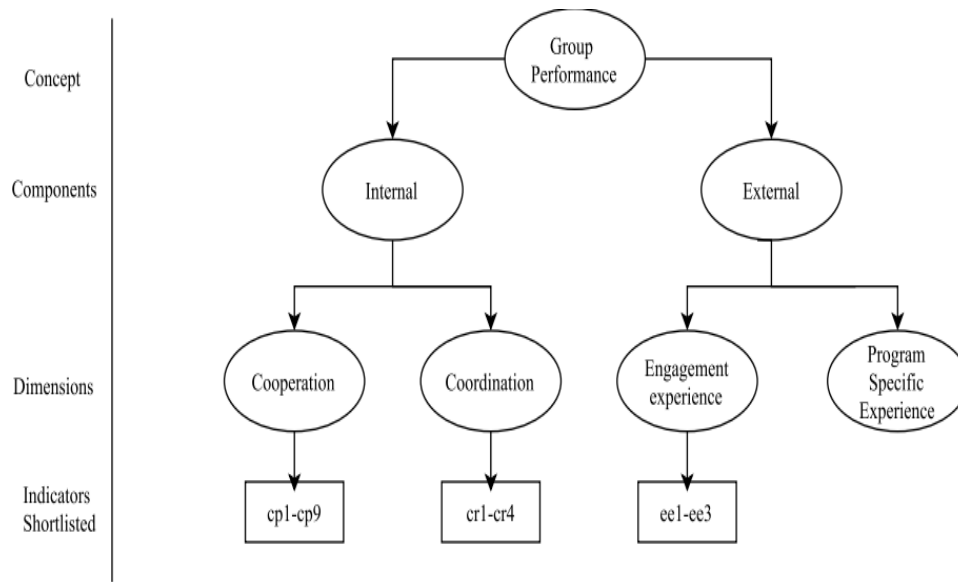


Figure 3.1: Conceptual Framework for Multidimensional Metric of SHG Performance

### Indicator shortlist and dichotomization

The entire list of indicators measured in the survey to provide a complete profile of SHGs in the sample is detailed in Appendix 2. Of these, select indicators of performance based on these criteria are presented in Appendix 1. The indicators shortlisted and their dichotomous forms include:

#### Internal

##### 1. Cooperation

- *Members are aware of group norms (Awareness, cp1):* Higher awareness of group norms among members increases the likelihood of more equi-

table and participatory governance of group activities. The indicator is the response to a question posed on the proportion of members aware of group norms, coded as a 3 level ordinal scale of 50 percent and below, 50-80% and above 80%. The dichotomous form distinguishes groups with more than 80% awareness.

- *Members participate actively in SHG decision-making and activities (Participation, cp2):* Higher participation in decision-making and activities indicates the absence of elite capture or dominance. The indicator is the response to a question on the proportion of members who participate actively, coded as a 3 level ordinal scale of 50 percent and below, 50-80% and above 80%. The dichotomous form distinguishes groups with more than 80% participation.
- *Attendance in the last two meetings (Attendane, cp3):* Attendance rates in the last two meetings captures the current level of involvement of members and their adherence to one of their most basic responsibilities as members. The indicator is the response to a question posed on the proportion of members who attended the last two meetings, coded as a 3 level ordinal scale of 50 percent and below, 50-80% and above 80% for each meeting. The dichotomous form distinguishes groups with more than 80% participation.
- *Members meet on a regular basis (Meeting reg, cp4):* Meeting regularity is mandated by most SHPIs. The indicator is the 4 level ordinal scale response to a question on how regularly the group conducts meetings,

ranging from highly irregular to highly regular. The dichotomous form distinguishes both regular and highly regular groups from the rest.

- *Documentation maintained up to date (Documentation reg, cp5)*: Although most SHGs are required to maintain multiple documents of various activities, for the sake of comparability across different SHPIs and governing rules, only maintenance of the savings ledger is assessed for this indicator. It is dichotomous and records success under 3 conditions - savings ledger is recorded, it is up to date and it does not have errors or missing information.
- *Has not defaulted on loans (No overdue loan, cp6)*: This indicator is dichotomous and records success if the group does not report a single overdue loan. It is one of the most widely used indicators of group performance although liable to under-reporting.
- *Members save on a regular basis (Savings reg, cp7)*: Similar to meeting regularity, this indicator is the 4 level ordinal scale response to a question on how regularly the group collects savings, ranging from highly irregular to highly regular. The dichotomous form distinguishes both regular and highly regular groups from the rest.
- *Leadership change since formation (Leader rotation, cp8)*: Not all SHGs are mandated to periodically select members to the executive body, but most are encouraged to, as a way to keep other members engaged. This indicator is a discrete measure of the number of changes in leadership and its dichotomous form indicates groups with at least one change.

- *Members access SHG documents for use or verification (Member doc access, cp9)*: This indicator is the dichotomous response to the question on if members access group documents. The response implicitly captures both existence of access to documents or transparency, as well as involvement of members.

## 2. Coordination

- *Activities undertaken (No. of activities, cr1)*: An effective group is one that is able to mobilise its members to undertake activities outside of its financial responsibility. Groups were asked whether or not they had participated in a list of 12 kinds of activities compiled from a synthesis of prior surveys and tools. The indicator is measured as a discrete sum of binary responses to the 12 kinds of activities and hence ranges from 0-12. No attempt was made to differentiate or classify activities. The dichotomous form differentiates groups who have undertaken higher than average number of activities , i.e higher than 4 activities.
- *Motivated to undertake activity on own accord (Self-motivated, cr2)*: Groups were also asked who the primary motivator was for each of the undertaken activities. The indicator is measured as the discrete sum of binary responses to the 12 kinds of activities if the group undertook the activity out of their own accord. The dichotomous form differentiates groups that have undertaken at least a single activity of their own accord.
- *Dropouts from the group (No dropouts, cr3)*: Dropouts refer to members

who were part of the group and have subsequently quit the group due to various reasons. The indicator captures the discrete number of dropouts from the group since formation, and captures groups that have 1 or more dropouts in its dichotomous form.

- *Total value of group savings (Total savings, cr4)*: Accumulated savings is an indicator of the financial discipline maintained by the group and is a widely used indicator of group performance. The indicator is a continuous variable capturing the total savings of the group at the time of the survey. In its dichotomous form it differentiates groups having a higher than average savings amount of Rs 35052.

## **External**

### 1. General engagement

- *Revived another SHG (SHG engagement, ge1)*: The group's experience in reviving other SHGs simultaneously indicates that the group has met certain standards set by the SHPI and that the group has experience in interacting and identifying with other women and group dynamics. The indicator is a dichotomous response to whether or not the SHG possesses experience in reviving groups.
- *Organized community around common issue (Community engagement, ge2)*: This indicator is the dichotomous response to the question on whether the group has experience mobilizing the common around a common

cause such as alcoholism, domestic abuse or towards conflict resolution.

- *Actively involved with SHG Federation (Fed engagement, ge3)*: SHGs are eligible for benefits and opportunities when they register with the block SHG federation, however many are registered by way of procedure but are not actively involved in federation activities. The indicator is the dichotomous response variable that records groups who have registered with Federations and have either received funds or training from them.

### **Validity and reliability tests**

The appropriateness of a score is determined by its validity, or the ability of the score to measure what it intends to measure and its reliability, or the ability of the score to be consistent and replicable. An assessment of validity and reliability can be performed in a number of ways. Owing to the nature of this study which is a cross-sectional study with no comparable estimates, only preliminary validity and reliability checks can be performed on the data collected. The checks are conducted primarily on the 'internal aspect of group performance to assess the validity of representation of its underlying variables. The 'external indicators of group performance are expected to display weaker relationships with another owing to the normative nature of this aspect and its multiple exogenous determinants.

#### *I. Validity*



The extent to which an aggregated score represents the theoretical constructs upon which it is based is referred to as validity (Furr and Bacharach, 2013). The definition of validity encompasses its many types, including content validity, construct validity and criterion validity. . A brief explanations of these forms and the tests used to assess them in this study are detailed below.

1. *Convergent and divergent validity*: Validity of a measure is assessed by examining whether the operational relationships of component indicators “converge” and “diverge” as they are theoretically expected to. In particular, we test whether indicators that are hypothesised to measure the same concept are positively associated with one another and those measuring different concepts are not associated with one another. The relationship between the various indicators in the multidimensional metric of SHG group performance are assessed through an analysis of their correlation coefficients. Appropriate tetrachoric, polychoric and polyserial coefficients are used depending on the nature of the indicator.
2. *Construct validity*: A measure of the degree to which indicators relate to one another within an expected system of theoretical relationships is broadly defined as construct validity. Factor analysis is the most widely used multivariate analysis technique to measure construct validity. Exploratory Factor Analysis (EFA) was performed using the computed polychoric correlations, which are found by Jöreskog and Sörbom (1996) to be the most consistent and robust estimators for ordinal and categorical data. Confirmatory factor

analysis (CFA) is carried out through structural equation modelling to test the particular hypothesis that the 'cooperation' dimension consists of two different aspects relating to participation and administration.

3. *Criterion/Concurrent validity*: Measures are additionally validated by the checking them against a specified criterion - either other simultaneously measured outcome variables ("concurrent validity") or future outcomes ("predictive validity"). Cross-tabulation, Spearman correlation and appropriate comparison of means tests (Mann-Whitney (Wilcoxon Rank Sum) and Kruskal-Wallis) were used to test relationships between the aggregated index and concurrently measure outcome variables. Predictive validity lies outside the scope of this study.

## *II. Reliability*

True score theory requires a score to be one that is both consistent as well as repeatable (Lord et al., 1968). Reliability tests used most often in psychometric scores encompass both tests of internal or inter-item consistency as well as inter-observer and test-retest repeatability of an index or scale. The scope of this study only allows for preliminary internal consistency tests to be performed.

- *Internal consistency*: A measure of internal consistency tests the extent to which indicators measure a common concept. Cronbach's  $\alpha$  is a function of the average covariance among all possible combinations of indicators and

Table 3.2: Summary of Validity and Reliability Tests Used

Type of Validity or Reliability Test	Procedure Used
1 Convergent and Discriminant Validity	Polychoric correlations
2 Construct Validity	Polychoric Exploratory Factor Analysis
3 Criterion/Concurrent Validity	Non-parametric comparison of means and correlations
4 Internal Consistency	Kuder-Richardson 20

ranges from 0 to 1. The Kuder-Richardson 20 formula is the particular application of coefficient  $\alpha$  to dichotomous variables. It is calculated as follows:

$$KR20 = \left( \frac{N}{N-1} \right) \left( 1 - \frac{\sum p_i q_i}{S_x^2} \right) \quad (3.1)$$

where  $N$  is the number of indicators measuring the same concept,  $p_i$  is the proportion of positive responses to the dichotomous indicator  $i$  with  $i = 1, 2, \dots, N$ .  $q_i$  is the proportion of negative responses equal to  $1 - p_i$ , and  $S_x^2$  is the variance of the total composite.

A table of tests applicable and the empirical methods used can be found in Table (3.2).

### Identification methodology

Composite indicators can typically be represented in the form of (1.1) as a linear weighted aggregation of a set of variables that are usually scale-adjusted (al-

though other aggregation rules exist, see Munda and Nardo (2009)).

$$I = \sum_1^N w_i x_i \quad (3.2)$$

where  $x_i$  is a scale adjusted variable normalized between zero and one and  $w_i$  the weight attached to  $x_i$ , usually with  $\sum_1^N w_i = 1$ ,  $0 \leq w_i \leq 1$  and  $i = 1, 2, \dots, N$ .

In the Count Method of Alkire and Foster (2011), the weighted aggregation for  $I$  is based on a matrix of 1s and 0s representing the achievement or deprivation in chosen outcome indicators  $y_i$  for individual  $i$ .

Let the matrix  $y = [y_{ij}]$  denote the  $n \times 12$  matrix of “achievements”, where each element  $y_{ij}$  represents the achievement of SHG  $i$  in indicator  $j$ ,  $i = 1, 2, \dots, n$  and  $j = 1, 2, \dots, 12$ . Let  $z = z_j$  be a  $12 \times 1$  vector of cutoff values for each indicator. The Alkire-Foster method suggests the use of a general permissible transformation (Stevens, 1946) of the achievement and cutoff vectors for individual  $i$ , in the form  $\rho : \mathbb{R} \times \mathbb{R} \rightarrow \{0, 1\}$  that creates an binary variable  $\rho(y_i, j) = 1$  if individual  $i$  meets the cutoff criteria  $z_j$ , for example  $y_{ij} > z_j$ , and  $\rho(y_i, j) = 0$  if not. Let the identification transformation be summarized in the binary score matrix  $g = [g_{ij}]$  where  $g_{ij} = \rho(y_i, j)$ . Using a relative weight vector  $w_j > 0$  such that  $\sum_{j=1}^{12} w_j = 1$ , we thereby obtain the total weighted score vector

$$I_w = [c_i] \quad (3.3)$$

where,

$$c_i = \sum_{j=1}^{12} w_j g_{ij} \quad (3.4)$$

For comparison a raw unweighted score vector

$$I_w = [c_i^0] \quad (3.5)$$

is presented, where,

$$c_i^0 = \sum_{j=1}^{12} g_{ij} \quad (3.6)$$

Similarly an  $n \times 3$  “dimensional achievement” matrix  $y^0 = [y_{id}^0]$  can be obtained from the indicator binary scores  $g^{ij}$  such that  $y_{id}^0 = \sum_{j=1}^k g_{ij}$ , where  $i = 1, 2, \dots, n$ ,  $j = 1, 2, \dots, k$  and  $d = 1, \dots, 3$  represent a dimension made out of  $k$  indicators. Using a  $1 \times 3$  dimensional cutoff vector  $z^0$ , we can identify ‘dimensional non-performance’ using the identification transformation  $\rho_0$ , where  $\rho(y_i, j) = 1$  if  $y_{ij} < z_j$  and vice versa. Further, we can define a  $1 \times 3$  “dimensional binary score” matrix  $g^0 = [g_{id}^0]$  and

$$I^0 = [c_i^0] \quad (3.7)$$

where,

$$c_i^0 = \sum_{d=1}^3 g_{id}^0 \quad (3.8)$$

such that  $I^0$  thus gives the total number of ‘dimensions of non-performance’, or the number of dimensions where the group has not performed up to the mark.

## Regression analysis

The study goes a step further to analyse the weighted index  $I$  for further detail in the broad dimensions included in the index. With specific respect to the ‘cooperation’ dimension, exploratory and confirmatory factor analysis is performed on the

indicators to identify underlying latent factors that correspond to general survey sections. Additionally, a logistic analysis is conducted on the unweighted index scores to identify relationships between group performance and the determinants of performance suggested in prior literature (see Appendix B for literature referenced).

The relationship between the various scores and hypothesised determinants is formalised as follows:

$$\ln(\Theta_j) = \alpha_j + \beta_1 S_i + \beta_2 C_i + \beta_3 A_i + \epsilon_i \quad (3.9)$$

where the respective log odds ratios are expressed as a linear function of the vector of institutional structure variables  $S_i$ , the vector of composition and cohesion variables  $C_i$  and agency variables  $A_i$ . The list of these variables is provided in Appendix A.

## CHAPTER 4

### DATA

#### **4.1 Descriptive profile of sample Self Help Groups**

A descriptive profile of the sample was built through questions relating to institutional structure, composition, agency and goals and constraints in the survey (see Appendix 6 for the survey tool from which the profile is drawn). A total of 170 SHGs were surveyed (although the final index score is computed for only 147 out of 170 SHGs).

##### **4.1.1 Institutional Structure**

*Self Help Group Promotion* Most of the groups in the sample (63%) were Government-promoted groups formed either as a result of efforts of the villages Anganwadi worker the primary frontline worker in the Governments Integrated Child Development Scheme, or officials of the Mission Shakti program under the Governments Department of Women and Child Development. A handful of Government-promoted groups were formed under the Odisha Tribal Empowerment and Livelihoods Programme under the Scheduled Castes and Schedules Tribes Development Department. Out of 49 groups promoted by NGOs, 9 groups reported the involvement of an MFI. Government-promoted SHGs and SHGs pro-

moted by other NGOs are linked directly to national public or private banks. Only in 11 groups (7% of observations) did members respond as taking primary initiative for the groups formation. 25 groups reported as having been promoted by more than one institution.

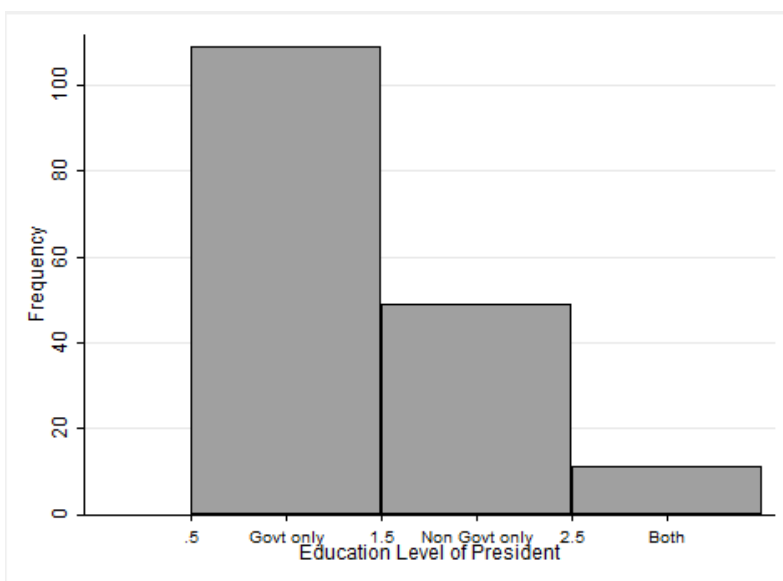


Figure 4.1: Self Help Promoting Institution

Overall, for the purpose of evaluation, groups were classified into exclusively government promoted SHGs (64.5% of the sample) and groups with non-governmental and other institutions as at least one of its promoters (35.5%).

*Monitoring and evaluation* SHPIs incentivize groups in a number of ways. 62% of groups had been graded for performance and 80% had their books regularly inspect by the SHPI. However only 11% claimed that their SHPI motivated them to undertake any activity outside of savings and credit, and 50% of the groups



said they were constrained by the lack of support and guidance from their SHPI. A composite ordinal indicator for monitoring level was created as an additive score of the binary variables indicating grading, inspection of books, motivation to undertake activity and adequate support and guidance, thereby ranging from 0-4. The distribution of monitoring scores is in 4.2.

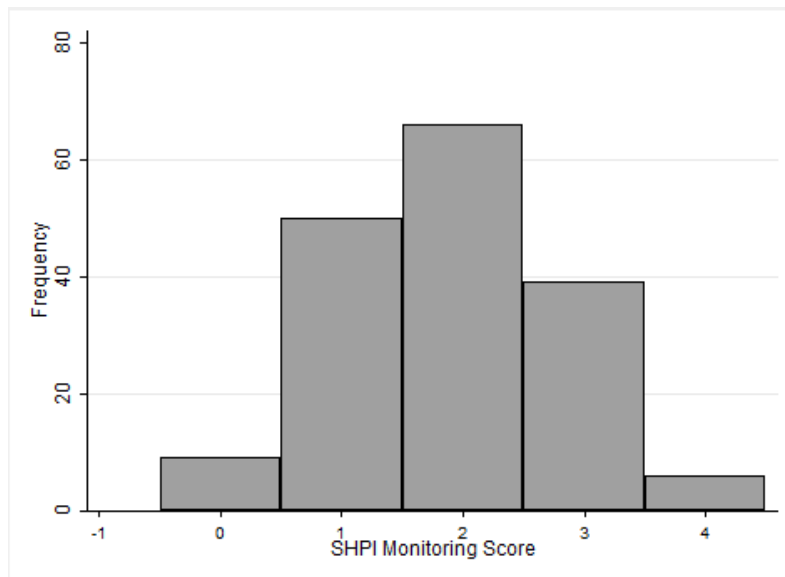


Figure 4.2: Self Help Promoting Institution

### 4.1.2 Composition

*Member demographics* A brief section in the survey recorded the demographic make-up of the sample and the groups. The mean age of all reporting 1855 members is 39.79 years with ages ranging from 19 to 55. 72% of the groups had members below the age of 30. 44% of members who provided their caste background were

from Scheduled Tribes, whereas 33% were OBC and 20% SC. An extremely high 74% of the sample claimed to have received primary or no education, higher than the 62% estimated over all districts (including high burden districts from which the study sample was drawn, as well as non-high burden districts) of Odisha by the National Sample Survey 66th Round in 2009-10. Only 1% had received tertiary education at the college level. 52% percent of the group depended on agriculture as their primary occupation and 29% were engaged as wage-labour. Despite the fact that SHGs often encourage their members to undertake entrepreneurial investments, only 6% of members mentioned self-employment/business as their primary occupation, indicating perhaps that opportunities arising from SHGs are used generally as supplementary income.

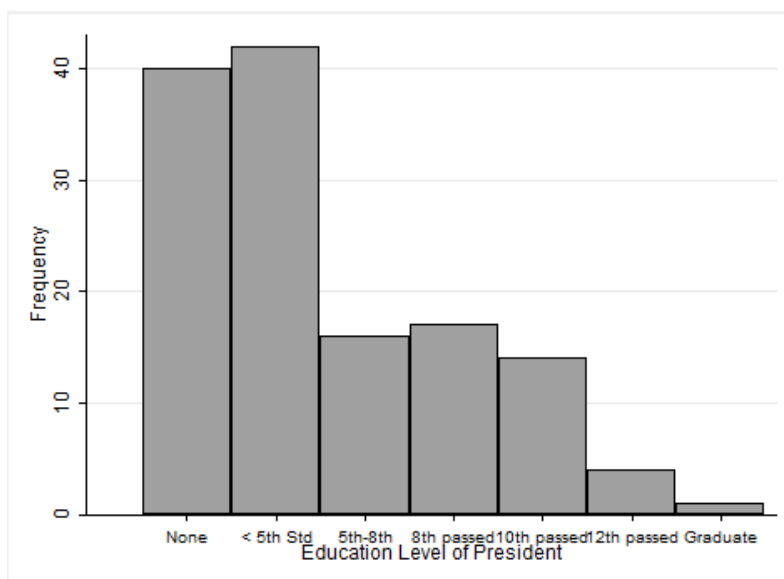


Figure 4.3: Education Level of President

For the analysis, the education level of president and presence of members

below the age of 30 were chosen to represent differences in education level and age. Additionally standardized mean education level and mean age of individuals was also used as a robustness check.

*Group composition* Among the groups, 61% were single-caste groups. Of these nearly half were exclusively Schedule Tribe (ST) groups and only 2 were exclusively general or forward caste groups. 28% had at least 2 castes making up the group and 10% had three or more castes. In caste-heterogenous groups, OBC dominated groups tended to be more common. Only in 10 groups did no caste group form a majority. In all but 11 groups, the president of the SHG was from the dominating caste, in all but 16, the secretary was from the dominating caste and in all but 3 for the post of treasurer. In the tightly knit village communities of India, groups also involve other family members who tend to live in the same locality. In the reporting sample, 72% had members who were related to one another. It did not appear as though executive members were any more likely to have a kin in the group to increase their influence. Executive members were not significantly different from other members in terms of age or occupation. However, they tended to be better educated, perhaps in order to carry out procedural tasks and interactions with the SHPI and banks.

*Lifespan and size* The average age of groups at the time of the survey was 9.5 years (Table A.2). 134 SHGs (80%) are mature or above the age of 5, according to NABARD classifications (NABARD 2014) and are expected to be fairly independent and involved in all aspects of empowerment. A third of the groups were

formed in the years 2004-2006, the most active years in SHG formation in the Tenth Plan of the Indian Government (2002-2007) (Fig 4.4). Despite being in existence for a long time, only 9 groups reported as being dormant for more than a year without conducting meetings, collecting savings or engaging with the Self-Help Promoting Institution altogether. While the general convention followed by most SHG-promoters in India is to ensure groups have between 10 and 20 members, most groups show a tendency to maintain smaller group sizes. The average SHG size in the sample is 11.6 members (Table 1). 42% of groups maintained the minimum requirement of 10 members and 78% of groups had 12 or fewer members (Fig 4.5).

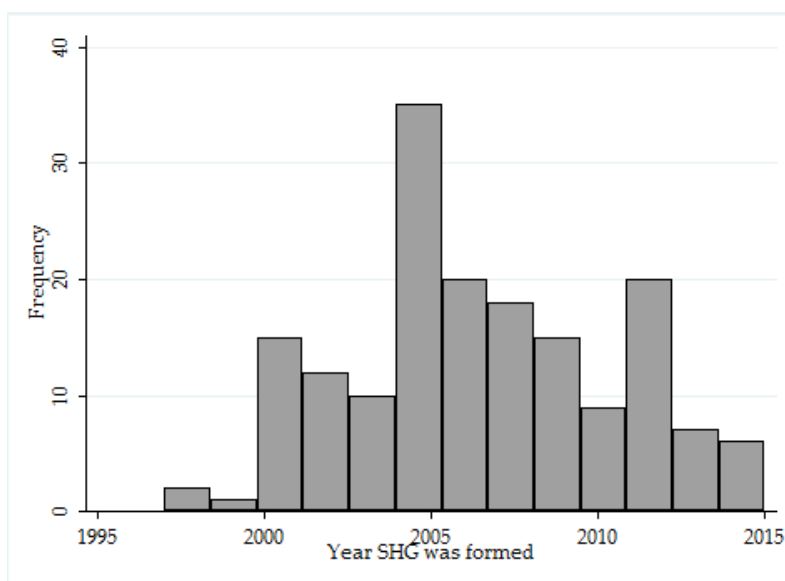


Figure 4.4: Self-Help Group Formation Years

*Group cohesion* In around half the groups, members were very familiar with one another at the time of the group formation. Based on qualitative information,

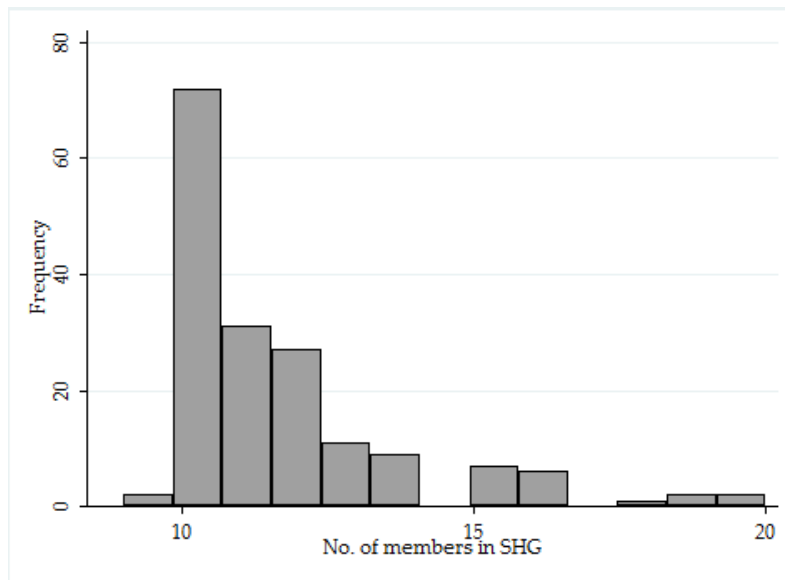


Figure 4.5: Self-Help Group Size

most groups appeared to have favoured homogeneity within the group in terms of location of residence, class, caste and occupation for the inclusion of members to the group at the time of formation, although some of these criteria could have been mandated by the Self-Help Promoting Institution. It is unclear how much freedom was accorded in practice to members to choose other members to the group. Outside of the group, members regularly worked together in 63% of SHGs, interacted in family gatherings together in 59% of SHGs and interacted in village gatherings in 49% of SHGs. 38% were involved in another SHG together.

### 4.1.3 Agency

20% of groups had a member who ran for office in local government and 25% has members who participated actively in public meetings. 25% has close kin who had run for or held office in local government. There were at least 11 groups in which women who had run for office came from families with no such history. Again 25% of groups has at least one member who had been a government functionary at the village level, such as a teacher or *anganwadi* worker, who would have had knowledge of and access to a number of government welfare schemes and programs for SHGs. 52% of groups had received some form of capacity building training either from their SHPI or another entity. This exposure allows groups to be much more effective than they otherwise would be.

### 4.1.4 Goals and constraints

*Group goals* Members provided consensus information on their understanding of the goals for their group. 75% of groups list income generation and economic empowerment as SHG goals at the time of formation, with only 39% citing financial access (to credit or other financial products) as a goal for the SHG indicating that both among SHPIs and group members, financial intermediation is generally viewed as a means to economic independence rather than an end in itself. 40% and 38% of groups cite social development and womens empowerment respectively as their goals at formation, followed by political empowerment cited by

23% of groups (Fig7). At the time of the survey however, around 22% of groups had included social development as part of their agenda and cited it as now being a part of their group goals. Similarly, 12% added womens empowerment to their agenda since formation. Most groups believed that they shared their goals with other SHGs in their village.

*Group constraints* The most common constraints cited by groups for not undertaking further activity or for not being unable to accomplish their goals and responsibilities was the lack of support from the promoting institution and the lack of knowledge or skill to accomplish the task, cited by around half the groups. Time constraint was cited by 36% of groups while member interest and coordination was cited by 32% as the reason the group could not perform better.

Descriptive statistics on indicators specifically shortlisted in the multidimensional representation of SHG performance are listed below.

## **4.2 Internal: Cooperation Dimension**

Various indicators of the group's ability to "cooperate" in fulfilling their duties and responsibilities are assessed using indicators pertaining to member participation and administration.

*Participation* About a half of the groups report a high (≥80%) participation in meetings and in activities and decision-making. Only 32% of groups have 80% or

more members who are aware of group norms, rules and regulations.

*Leadership* All SHGs are mandated to have a President and a Secretary as executive members, while the post of Treasurer is required in certain cases only. Very few SHGs (9%) conducted elections for executive posts and a majority instituted leaders by selection. Once instituted, 60% of the groups did not change their leadership, half of whom were 10 or more years old. 80% of groups had appointed a Secretary and only 20% had a post of Treasurer at the time of the survey. Tasks appeared to be equally distributed between President and Secretary in most groups with a mean of 2.9 different responsibilities (from a pre set list of executive responsibilities) carried out by the President and 2.4 by the Secretary, with the Treasurer carrying out less than 1 responsibility.

*Fulfilment of administrative responsibilities* 80% of SHGs generally collected monthly savings and the rest in more frequent intervals, weekly or bi-weekly. Although groups are typically required to receive savings contribution at groups meetings, 27% of the groups had varying meeting and savings schedules. 52% of the groups reported as having an attendance of 80% or above in their last 2 group meetings and the common topics discussed ranged from financial and administrative responsibilities of the SHG to Government schemes and social activities undertaken like Shakti Varta.

Government SHGs are required to maintain thorough documentation of their activities, savings and credit in books such as the savings ledger, loan ledger, cash book, minutes book and resolutions book. Whenever possible, surveyors



requested permission from the group to check their documents and made note of their maintenance. Only 26 groups maintained all 5 books without errors or missing information, and only 37% of groups that collected savings and disbursed credit maintained the crucial savings and loan ledgers up to date. 77 and 80% of the groups reported that members and the SHPI inspected these books periodically.

*Fulfilment of financial responsibilities* Except for 2 NGO promoted groups, all other groups provided members with financial intermediation through savings. 70% of the groups additionally provided their members with access to credit. Other financial services through the group such as insurance were uncommon. The most popular savings cycle amounts were Rs. 100 (27% of groups) and Rs. 50 (42% of groups). SHG assets were mainly kept in the form of a savings account at a formal bank or as cash in hand. Very few groups held physical assets, fixed deposits at bank or deposits with their SHPI. A majority of the groups (56%) did not report any internal lending between members at the time of the survey and 65% did not report any borrowing from external sources such as banks or NGO-MFIs, although this is likely to be under-reported as we did not make an attempt to verify this information. The average total group savings accumulated at the bank was Rs. 35051.68 (or Rs. 31870 when eliminating a single outlier that was around 10 standard deviations from the mean). This is comparable to estimates of a NABARD study on groups in Orissa which estimated average savings to be Rs. 39,951 (NABARD 2013-2014). Among those who had borrowed from external sources, the mean loan size was Rs 93,967.55, higher than the NABARD

estimate of Rs.89,522 for Orissa. The average size of an internal loan among those who reported internal lending was Rs. 37501.59. Although susceptible to under-reporting, 59 groups reported having at least one loan overdue to external sources for 30 days or longer.

### **4.3 Internal: Coordination**

The groups ability to “coordinate” to achieve outcomes such as undertaking activities and amicable resolution of conflicts to prevent dropouts is measured through the following indicators.

*Group activities* Information on the activities other than financial intermediation undertaken by a group since its inception was recorded. Surveyors recorded immediate reactions and]read out a list of potential private and public activities SHGs in Odisha are engaged in ((cite)) and marked groups that had engaged in the activity and also the primary entity that motivated the engagement. Based on the nature of the public programs the activities fall under, they were classified as income-generating and non-income generating activities. Income generating activities included any entrepreneurial activity or marketing of produce, service provision to the Governments Public Distribution System, Integrated Child Development Scheme or Mid-day-meal Scheme and contracting of public works such as drinking water and sanitation facilities for which groups receive a commission. Non-income generating activities primarily included community support

and awareness around good health, nutrition practices and education, against alcoholism and domestic violence, and towards resolution of conflicts within the village. It also included training and capacity building programs undertaken by the group to improve their skills and functioning.

Groups undertook an average of only 2.4 income generating activities and 1.9 non-income generating activities in their lifetime. 15% of the sample did not report undertaking any additional activities other than financial intermediation, 79% undertook at least 1 income generating activity and 76% undertook at least 1 non-income generating activities. Among income generating activities, the mostly commonly reported was participation in the Total Sanitation Campaign (TSC) (58% of groups) and the Integrated Child Development Scheme (56% of groups) of the Indian Government and water supply initiatives of multiple implementers (56% of groups). Despite being stated as a goal by many groups, only 46% had been engaged in an entrepreneurial or marketing activity.

Among non-income generating activities, promotion of good health practices was most common (60% of groups), perhaps as a result of the association of the study with Shakti Varta. Around a third had engaged in resolving domestic violence issues, conflicts within the community and other social issues like alcoholism. Only 20% had undergone training and capacity building programs conducted by the SHPI or the Government through Block Federations.

30% of groups undertook any of the activities mentioned above out of their own accord and 29% as a result of encouragement from the SHPI. In contrast,

57% of groups had been prompted by village level frontline government workers, especially the Anganwadi worker of the ICDS to participate in activities. 88% of these groups were not formed under the ICDS and hence the Anganwadi worker was not obliged to involve them as the SHPI. Compared to the 18% of total groups not promoted by NGOs that were motivated by NGOs to undertake activity, the involvement of the Anganwadi worker in SHG performance is high.

The distribution of the total number of activities undertaken is given in Fig 4.6.

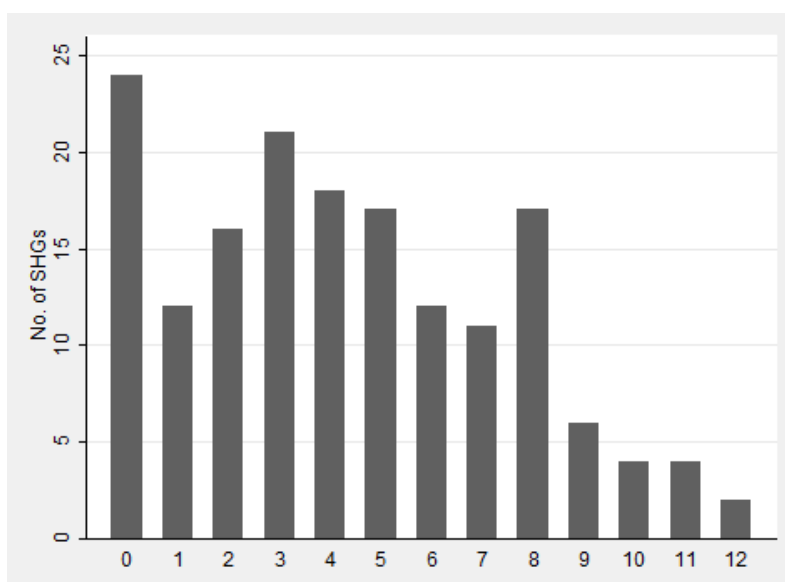


Figure 4.6: Total No. of Activities undertaken (out of 12)

*Conflict resolution* Majority (58%) of groups had at least one dropout at some point in their tenure. The average number of dropouts per group is 1.3. Larger groups tended to have more dropouts with a statistically significant correlation of 0.59, while age had a smaller but significant positive association of 0.2 with

dropouts. The most common reason cited for dropping out was age and death (in 41% of groups), followed by migration (20%), marriage (19%) and negative attitude of household members (17%). In all, 22% of groups had a member leave as a voluntary decision due to dissatisfaction with the group and access to credit or to avail better programs and memberships.

#### **4.4 External: General engagement**

A few select indicators were chosen to represent the initiative undertaken by SHGs to perform roles outside their mandate. These include measures used by some SHG evaluations to assess performance such as awards received and grade and other indicators such as involvement in reviving other SHGs, experience in mobilizing community and participation in SHG Federations. 15% of groups had received awards, 16% had reached out and garnered support within the community for a common cause, 29% had helped revive other underperforming SHGs and 18% were actively involved in Federation activities.

## CHAPTER 5

### RESULTS

The empirical strategy detailed in section 3.2 is conducted on a subset of available indicators (refer Table 5.1) shortlisted based on theoretically and empirically informed selection criteria.

Table 5.1: Shortlisted Variables and Dichotomous Forms

Indicators chosen	Form of $y_{ij}$	Cutoff $z_j$	Criteria $\rho$
INTERNAL			
Awareness (cp1)	Ordinal (3)	2	>
Participation (cp2)	Ordinal (3)	2	>
Attendance (cp3)	Ordinal (3)	2	>
Meeting Reg (cp4)	Ordinal (4)	2	$\geq$
Documentation Reg (cp5)	Binary	0	>
No overdue Loans (cp6)	Discrete	1	<
Saving Reg (cp7)	Ordinal (4)	2	$\geq$
Leader Rotation (cp8)	Discrete	1	$\geq$
Member Doc Access (cp9)	Binary	0	>
No. of Activities (cr1)	Discrete	$\mu(4.3)$	>
Self-Motivated (cr2)	Discrete	1	$\geq$
Dropouts (cr3)	Discrete	1	<

Total Savings (cr4)	Discrete	$\mu(Rs.35052)$	>
EXTERNAL			
Revived another SHG (ee1)	Binary	0	>
Organized community around common issues (ee2)	Binary	0	>
Actively involved with SHG Federation (ee3)	Binary	0	>

## 5.1 Preliminary Reliability and Validity Results

Preliminary validity and reliability tests listed in table are conducted in order to systematically assess the indicators included in the index.

### 5.1.1 Convergent Validity

Polychoric and polyserial correlations between shortlisted indicators in their original forms are presented in Table C.1 (Appendix C). Relationships between most indicators are positive in the direction of theory and hence consistent in their representation of a single construct of 'internal performance. The categorical variable 'meeting regularity and continuous variable total savings displays negative correlations with several variables owing to its highly skewed distribution. Overall,

the Likelihood Ratio test of no correlation between variables is rejected at the 1% level. Additionally, Kendall's Tau-b coefficients are estimated with similar results but slightly smaller magnitudes.

Tetrachoric correlations are estimated on the dichotomized version of the original indicators. In this form, the indicator 'rotation of leadership displays negative correlations with 6 out of 12 variables overall, and 3 out of 6 variables within the same 'cooperation dimension. As a result, the indicator is dropped from the index for exhibiting relationships inconsistent with theory either due to measurement error or the presence of strong exogenous influence. The dichotomized representation of total savings value continues to show negative correlations with 5 out of 12 variables overall and 1 out of 3 in the 'coordination dimension. It is dropped from the index to be used for criterion analysis. The indicator 'savings regularity is also dropped from the index, in consideration of parsimony, due to its strong positive correlation with 'meeting regularity. Savings are typically collected in meetings and hence both cycles are expected to be co-dependent on the same exogenous factors. An additional concern regarding these two variables is that the correlation between them may be positively influenced by self reporting bias which implies that dropping one variable would work to increase overall reliability. This is not a concern held on the awareness, attendance and participation variables at this stage because although they too are prone to measurement error, it is less likely that the correlation between them is due to common exogenous determinants.



Upon elimination of 3 variables from the convergent analysis, the index consists of the 6 'cooperation variables, 3 'coordination variables and 3 'external engagement variables to form the *Theory Based Index I<sub>1</sub>* described in Table 5.2.

### 5.1.2 Construct Validity

**Exploratory Factor Analysis** The rotated loadings structure of the exploratory factor analysis (EFA) based on polychoric correlations for *Theory Based Index I<sub>1</sub>* are presented in Table C.2 (Appendix C). On analysis of all variables in the index, as hypothesised, 3 factors can be retained using the Guttman rule, i.e with eigenvalue greater than 1 Guttman (1954). Factor 1 loadings are high in 'awareness(cp1), 'attendance(cp2) and 'participation(cp3) consistent with the hypothesised 'cooperation' dimension. Factor 2 loadings are high in 'self-motivated(cr2), 'SHG engagement'(ee1) and 'community engagement'(ee2). This bears strong similarity the hypothesised 'external engagement experience' dimension except for the inclusion of the 'self motivated' indicator. Loadings in the third factor are high in 'no overdue loans(cp6) and 'no. of activities'(cr1) which could signify the 'coordination' dimension. Overall, the polychoric factor analysis reveals relationships between variables representing the latent constructs identified as 'cooperation' and 'external engagement experience'. The third latent factor bears only a weak semblance to the hypothesised 'coordination' dimension.

Based on the EFA, retained factors and the indicators that have a high loading

(>0.5) on each of the factors, the *Theory Based Index I<sub>1</sub>* is further streamlined to form the *EFA Based Index I<sub>2</sub>* described in Table 5.2.

**Sensitivity to variable dichotomization** In order to verify the results of the EFA and to attempt an improvement, the dichotomization rules or z cutoffs are revised for the shortlisted indicators in *Theory Based Index I<sub>1</sub>*. While all indicators have a straightforward dichotomization, there is scope for better representation of the variable 'no. of activities'(cr1). The variable is based off a question to groups on whether or not they have undertaken each of 12 prompted activities, aside from savings and credit, since formation. The total number of activities undertaken represents the original discrete form of the variable and the dichotomized form identifies groups with "higher than average" number of activities undertaken. Since the 33% of observation lie within 1 standard deviation around the mean, the sensitivity to this cutoff is especially high (refer 4.6).

To avoid the misrepresentation by the dichotomizing on the basis of the mean and to bring out the diversity in activities undertaken, two binary variables are introduced in place of the variable 'no. of activities'(c1), namely 'entrepreneurial activity'(cr4) and 'public welfare activity'(cr5). 'Entrepreneurial activity'(cr4) is a binary variable derived from the same questions that 'no. of activities'(cr1) is based and indicates whether or not the SHG has undertaken an entrepreneurial income generating small business or marketing activity. 'Public welfare activity'(cr5) similarly draws from the same underlying question and represents whether or not the SHG has been involved in one of 6 different public welfare programs such

the Public Distribution System, ICDS, Mid Day Meal, drinking water provision, Total Sanitation Campaign and the Sarva Shiksha Abhiyan or education program. Because of the fundamentally different skill set and incentive structure utilized by these two different kinds of activities, it is believed that the two dichotomous variables better represent the achievement of group objectives than a single dichotomous variable based on the total number of activities and a moment-based dichotomization rule.

EFA is performed with the two new indicators 'entrepreneurial activity'(cr4) and 'public welfare activity'(cr5) in place of 'no. of activities'(c1) and the results are detailed in Table C.3. As before, 3 factors are retained by the 'Guttman' rule. The loadings around the first two factors remain the same and the two new indicators along with 'no overdue loans(cp6) shows similar loading weights for Factor 3 or the hypothesised '*coordination*' dimension. The Likelihood Ratio chi-squared coefficient improves as well. A third index utilizing this alternate definition of the indicator 'no. of activities'(cr1) is retained for further analysis and detailed as *Alternative z Index I<sub>3</sub>* as in Table 5.2.

## 5.2 Shortlisted Index Scores

A total of 3 Indices are shortlisted based on the preliminary validity and reliability tests. These are, the *Theory Based Index I<sub>1</sub>* with a total of 12 indicators, the *EFA Based Index I<sub>2</sub>* and the *Alternative z Index I<sub>3</sub>*, each with a total of 9 indicators. The

Table 5.2: Indices and Indicators

Theory-based Index $I_1$	EFA-based Index $I_2$	Alternative $z$ Index $I_3$
<i>1. Cooperation</i>		
Awareness (cp1)	Awareness (cp1)	Awareness (cp1)
Attendance (cp2)	Attendance (cp2)	Attendance (cp2)
Participation (cp3)	Participation (cp3)	Participation (cp3)
No Overdue Loan (cp6)		
Meeting Reg (cp4)		
Documentation Reg (cp5)		
<i>2. Coordination</i>		
No. of Activities (cr1)	No Overdue Loan (cp6)	No Overdue Loan (cp6)
Self-Motivated (cr2)	No. of Activities (cr1)	Entrepreneurial activity (cr6)
Dropouts (cr3)	Public welfare activity (cr7)	Public welfare activity (cr7)
<i>3. Engagement Experience</i>		
SHG Engagement (ee1)	Self-Motivated (cr2)	Self-Motivated (cr2)
Community Engagement (ee2)	SHG Engagement (ee1)	SHG Engagement (ee1)
Fed Engagement (ee3)	Community Engagement (ee2)	Community Engagement (ee2)
<i>12 Indicators (6 + 3 + 3)</i>	<i>9 Indicators (3 + 3 + 3)</i>	<i>9 Indicators (3 + 3 + 3)</i>

indices and their component indicators are summarized in 5.2.

In order to choose the best of the 3 indices, further validity and reliability tests are conducted based on the computed weighted index score. The score is

weighted in a manner of Eqn 3.5 (Section 3.3.3) such that each of the dimensions receives an equal one-third weight. In indices  $I_2$  and  $I_3$  where there are equal number of indicators within each dimension, each indicator carries equal weight. The weighted score is scaled by 10 in order to give a comparable 0-10 score. Additionally, the distribution of the index scores are presented as it is an indicator of the discriminatory power.

## 5.3 Further Validity and Reliability Tests

### 5.3.1 Internal Consistency

The Kuder-Richardson (KR20) statistic measures the internal consistency of a test and a particular form of the Cronbach's Alpha suited for strictly dichotomous tests. A higher KR20 statistic (ranging between 0 and 1) represents a higher degree of reliability within indicators designed to measure a common characteristic, although an exceptionally high statistic would indicate homogeneity. KR20 coefficients for all shortlisted variables, each of the three indices identified in the empirical process and the hypothesized dimensions within each presented in Table C.5, along with their respective Item-Test correlations and average item difficulty. A comparison of the KR20 values for the total indices indicates that reliability is highest in the *Alternative z Index I<sub>3</sub>*. Comparing the dimension specific KR20 values across the indices also reveals that the dimensional consistency is highest for

each of the 3 dimensions in the *Alternative z Index I<sub>3</sub>*.

For the purpose of demonstration, the *Alternative z Index I<sub>3</sub>* is also presented with 4 indicators in the 'coordination' dimension (including the additional indicator 'documentation regularity'(cp5)) due to the relevancy of that indicator from the EFA in C.3. However, the *Alternative z Index I<sub>3</sub>* with 3 indicators in 'coordination' dimension (and 9 overall) is retained due to the higher KR20 within the dimension and with consideration for parsimony, simplicity and symmetry in dimensions. Further tests are conducted on for this Index *I<sub>3</sub>*.

### **5.3.2 Discriminant Validity**

Just as positive relationships are desired between indicators measuring a common larger latent construct such as performance, or dimensions such as 'cooperation and 'coordination, absence of strong correlations between dimensions is desired in indices. Polychoric and Kendalls Tau coefficients between raw additive sums of 'cooperation, 'coordination and 'external engagement experience scores for the *Alternative z Index I<sub>3</sub>* are small in magnitude and are not statistically significant (See Table C.4). This suggests that the hypothesised dimensions are disparate and the multidimensional representation of performance as an index is helpful in building a complete understanding of SHG efficiency.

### 5.3.3 Criterion/Concurrent Validity

As another validity check, the association between the computed index score  $I_3$  (*Alternative z Index*) and several key variables concurrently measured in the survey are analysed for compliance with theoretical relationships. The appropriate tests - Mann-Whitney on binary variables, Kruskal-Wallis for ordinal variables and Spearman correlations for discrete and continuous variables are presented in Tables C.6 and C.7 in Appendix C. While Table C.7 captures relationships with expected determinants, C.6 captures relationships with other concurrent variables of interest.

The mean weighted total score is positively associated with most concurrent variables. Member access to group documents, regularity of meetings are the concurrent variables that hold significantly positive associations with the index, while lack of member interest and coordination holds significantly negative associations. Among potential determinants, education level of president is positively related to total score while age of the group bears a significant negative correlation.

### 5.3.4 Score Distribution

Basic descriptive statistics and distributions of the three shortlisted indicators  $I_1$ ,  $I_2$  and  $I_3$  are presented in Table 5.3. The *Alternative z Index*  $I_3$  also has the maximum

Table 5.3: Comparison of the distribution of computed Indices

Index Measure	N	Mean	Standard Devia- tion	Skewness	Kurtosis	Min	Max
<i>Theory Based Index I<sub>1</sub></i> (0-10)	103	4.612	1.799	0.259	3.209	0.55	10
<i>EFA-Based Index I<sub>2</sub></i> (0-10)	147	4.452	2.255	0.107	2.456	0	10
<i>Alternate z Index I<sub>3</sub></i> (0-10)	147	4.648	2.141	0.055	2.365	0	10
<i>I<sub>3</sub> Dimension Scores</i>							
<i>Cooperation</i> (0-3)	147	1.286	1.128	.283	1.692	0	3
<i>Coordination</i> (0-3)	147	1.809	.939	-.261	2.111	0	3
<i>External Engagement</i> (0-3)	147	1.088	1.033	.420	1.923	0	3

range and the least standard deviation, skewness and kurtosis among the three.

## 5.4 Analysis of the Chosen Index

Based on the second round of reliability and validity tests on the three shortlisted indicates  $I_1$ ,  $I_2$  and  $I_3$ ,  $I_3$  appears to perform best index. The chosen index and its components are once again described in Table 5.2. The frequency distribution of the total scores and the scores within each dimension are displayed in Figure 5.1 and tabulated in Table 5.4. Total score is fairly equally distributed between 0-10.



Table 5.4: Frequency Table of  $I_3$  Score

Dimension		No.	Col%
<i>Cooperation (0-3)</i>	0	48	33
	1	39	27
	2	30	20
	3	30	20
<i>Coordination (0-3)</i>	0	13	9
	1	42	29
	2	52	35
	3	40	27
<i>External Engagement (0-3)</i>	0	56	38
	1	38	26
	2	37	25
	3	16	11
<i>Total Score <math>I_3</math> (0-10)</i>	0	1	1
	1.11	14	10
	2.22	15	10
	3.33	26	18
	4.44	26	18
	5.55	24	16
	6.66	24	16
	7.77	13	9
	8.88	2	1
	10	2	1
<i>Total</i>		147	100

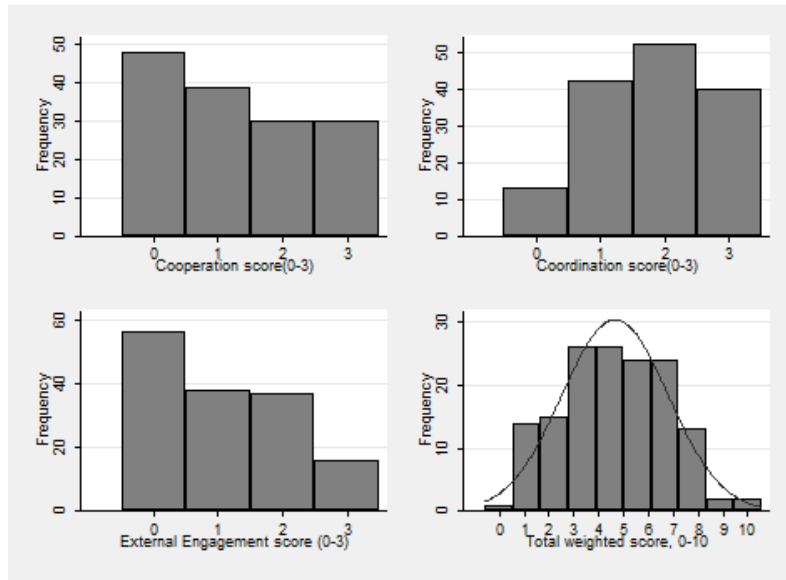


Figure 5.1: Distribution of Dimension Scores and Total Scores of Index  $I_3$

### 5.4.1 Dimensional Non-Performance

The Alkire-Foster method adopted in the estimation of the Multi-dimensional Poverty Index and the Women’s Empowerment in Agriculture Index involves a dual cutoff method that not only identifies an index distribution but also the count of groups that can be described as non-performers overall or within each particular dimension. Assuming the second cutoff  $z^0$  for each dimension to be 0, i.e groups that have a score of 0 in a dimension are said to be “non-performers” or “deprived” as used by Alkire and Foster (2011), we can identify deficient groups in the manner of Eqn 3.7 (Section 3.3.3). Summary statistics for the binary ‘non-performance’ indicator in each dimension are expressed in Table 5.5.

Among a total of 147 groups for whom the index can be calculated, 38% are

Table 5.5: Frequency Table of Dimensions of Non-performance

<i>Dimension of Non-performance</i>	No.	Col%
Cooperation	48	33
Coordination	13	9
External Engagement	56	38
<i>Total No. of Dimensions of Non-performance</i>	No.	Col%
0	60	41
1	58	39
2	28	19
3	1	1
<i>Total</i>	147	100

non-performers in the ‘external engagement experience’ dimension and 33% in the ‘cooperation’ dimension. In comparison groups tend to perform much better overall on the ‘coordination’ dimension.

In the scope of this study, the cutoff  $k$  for the total score in order nor a “headcount” or overall-successful and unsuccessful SHGs has not been attempted due to the lack of appropriate concurrent criteria to validate “headcount”. The study focuses on the ordinal ranking of groups made possible by the total score  $I_3$  and conducts further enquiry on the appropriateness and meaning and of this ranking.

Nevertheless, using dimensional non-performance indicators enables evaluators to supplement the information provided by the total index score by identifying the specific areas for improvement.

## 5.5 Logistic Regression Analysis

Logistic regressions of total score and individual dimension scores on expected determinants sheds further light on the validity of the chosen index  $I_3$ . Drawing from the criterion validity tests, ordered logistic regressions on hypothesized determinants were carried out, and the results presented in Table 5.6. The basic regression of weighted total scores on the set of institutional structure, composition and agency variables shows a significant positive relationship between the score and education level of president, and a significant negative relationship between the score and age of the group. The overall model displays a moderately good fit and a significant Likelihood Ratio. The proportionality of odds assumption holds as well. This relationship with education level of president and age of the group continues to hold when the 'cooperation' dimension alone is considered as the dependent. For the 'coordination' dimension, the score is positively associated with SHG reporting political, social and women's empowerment as being among groups goals, while age of the group continues to hold a negative relationship. For the 'external engagement experience' dimension, level of SHPI monitoring and the presence of politically active members in the group display

a significant positive relationship, while caste heterogeneity in the group (i.e the SHG is not caste homogenous or has more than 1 caste) displays a significant negative relationship. The hypothesized determinants thus affect total and individual dimension scores with varying relative magnitudes and significance.

#### *Effect of education and age of the group*

The significance of education level of president and age of the group in determining total weighted index  $I_3$  scores are further tested for robustness by modifying each of these variables in two ways. Table D.1 in Appendix D presents ordered logistic regressions results of the total weighted score on the same set of determinants, with education level and age of the group modified either by dropping outliers (above 95th percentile) or by recoding to reduce the number of categories. Education level is reduced from a 7 level scale to a 6 level scale including the single outlier observation with tertiary education in the penultimate category of high school completion. Age is recoded from a discrete variable to a 4 level category ranging from 'less than 5 years' to '15-20 years'. Education level of the president and age of the group continue to remain significant determinants of total weighted score, although the level of significance reduces slightly

#### *Alternate Dependent Variables*

Further checks are conducted by transforming the dependent variable total weighted score and using the 'dimensional non-performance' indicators from section 5.2.1, the results of which are in Table D.2 (Appendix D). The total weighted

Table 5.6: Ordered Logistic Regression of  $I_3$  Total Score and Dimensions

	Total Score	Cooperation	Coordination	Ext Engagement
	(1)	(2)	(3)	(4)
	b/se	b/se	b/se	b/se
NGO Involvement	-0.065	-0.271	0.501	-0.205
	-0.36	-0.38	-0.38	-0.39
Group size (No.)	-0.019	-0.142	0.125	0.037
	-0.07	-0.08	-0.08	-0.08
Group age (Yrs)	-0.129**	-0.122*	-0.145**	0.006
	-0.05	-0.05	-0.05	-0.05
Caste heterogeneity present	-0.375	0.393	-0.415	-0.950*
	-0.35	-0.37	-0.36	-0.38
SHPI monitoring	0.263	0.095	-0.137	0.519**
	-0.18	-0.18	-0.18	-0.19
Edu level of President	0.291*	0.393**	-0.001	0.083
	-0.12	-0.13	-0.12	-0.13
Members below 30	0.113	0.134	-0.226	0.441
	-0.4	-0.43	-0.42	-0.43
Members politically active	0.635	-0.111	-0.291	1.670***
	-0.37	-0.4	-0.4	-0.43
Members work together	0.678	0.171	0.355	0.7
	-0.35	-0.36	-0.36	-0.37
SHG reports developmental goals	0.743	-0.265	1.498***	0.563
	-0.39	-0.41	-0.44	-0.43
N	119	119	119	119
R-sqr	0.059	0.083	0.079	0.119
D-Fre	10	10	10	10
Chi-sq	28.479	27.188	24.667	36.231
p-val 0.002	0.002	0.006	0	

\*  $p < 0.05$ ,\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

score is recoded to form a 4 level categorical variable corresponding to its quartiles, and the total number of dimensions (ranging from 0-3) of 'non-performance' is also included as a dependent variable aside from the binary 'non-performance' indicators for each dimension. In the ordered logistic regression of total weighted score quartiles, the proportionality of odds assumptions continue to hold and the education level of president and age of the group continue to hold significant relationships in the same directions as earlier regressions. For the 'non-performance' indicators however, this significance no longer exists. The level of SHPI monitoring and the presence of politically active members significantly affects non-performance in the 'external engagement experience' dimension and the total number of dimensions of 'non-performance'. The regressions for non-performance in the 'cooperation' and 'coordination' dimensions however are not properly identified and do not show meaningful relationships with the same set of determinants.

#### *Alternate Independent Variables*

Sensitivity to the variable definitions of the hypothesized determinants is tested by attempting alternate representations of few indicators such as SHPI monitoring, education level of president and the presence of members below the age of 30 in the group (see Table D.3, Appendix D). The SHPI monitoring score, which is a categorical additive score of binary indicators representing SHPI duties (grading, inspection of books, motivation to perform activities and adequate support and guidance) is replaced by a single binary indicator representing 'ad-

equate support and guidance provided' as reported the SHG. Education level of the president, a categorical variable is replace with the z score representing the standardized average education level of the entire group. The binary variable representing the presence of members below the age of 30 is replace with average age of all members in the group. It is notable that education level of the president as well as the standardised average education level of the group remains positively associated with total score under each of these circumstances, and age of the group remains negatively associated with total score. The alternate forms of SHPI monitoring and age of members do not display a significant relationship.

*Relationship between dimensional non-performance and total score*

Groups who have “not-performed” or earned a 0 in a dimension also tend to have significantly lower total index scores. A logistic regression of non-performance binaries on the total score also suggests a significant negative relationship between total index score and dimensional non-performance with relatively good fit. This suggests that there exists a consistent relationship between non-performance in each dimension and the total index score, and information from both can be used to better understand the nature and causes of SHG inefficiency.

In conclusion, the logical steps for test and index creation undertaken suggest the best combination of indicators (given the theoretical framework considered and available data) for the creation of the additive index. The computed weighted index score  $I_3$  has admissible validity and reliability and displays meaningful re-



Table 5.7: Relationships with concurrent variables

Dimension	Non- Performance	Mean weighted Total score	Measure of association	Test Statistic
Cooperation	No	5.272537	Mann-Whitney	6.052***
	Yes	3.115469		
Coordination	No	4.903704	Mann-Whitney	5.360***
	Yes	1.507937		
External Engagement Experience	No	5.469256	Mann-Whitney	6.990***
	Yes	3.107345		
Total No. of Non-Performing Dimensions	0	6.081872	Polyserial	-.833***
	1	3.948718	Correlation	
	2	1.904762		
	3	0		

\*  $p < 0.05$ ,

\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

relationships with other concurrent variables and determinants. The distribution of scores also does not display an upward bias or left skewness unlike the some SHG grading criteria Brett (2003). Using the Alkire-Foster dual cutoff framework enables richer analysis into the specific dimensions of non-performance in order to make more directed recommendations for the improvement of SHG-based interventions.

## CHAPTER 6

### DISCUSSION

Many studies on microfinance programs raise important questions on the heterogeneity of impacts caused by differences in group functioning, the sustainability and evolution of groups and the characteristics that differentiate those that are self-reliant and capable of being agents of social change (Bennett et al., 1996; Deininger and Liu, 2009b; Chen et al., 2006). A first step in such an investigation would be the identification of performers or “good SHGs” and some measure of the distance between performers and non-performers. This study presents a preliminary attempt in that regard. By adopting the ‘membership-based organizations of the poor’ framework to understand the expectations placed on SHGs by different stakeholders and characterizing SHG performance as being composed of multiple dimensions, it presents an effort to formalize a standard metric of performance for SHGs. A review of literature suggests the incorporation of 4 dimensions of performance that can broadly be grouped under ‘internal’ and ‘external’ responsibilities of the group. The dimensions include ‘cooperation’, ‘coordination’, ‘general engagement experience’ and ‘program specific experience’. The study uses data from 170 SHGs in Odisha, India to test the relevancy of hypothesised indicators through the use of routine validity and reliability checks used in psychometrics.

The methodology followed draws from psychometric theory and index-creation literature to develop a theoretical foundation and nomological network

for the selection of appropriate indicators of SHG performance. The study identifies three potential indices and shortlists the best weighted index score (represented in the study as  $I_3$ ) based on traditional reliability and validity tests that can be conducted on given data. The weighted index  $I_3$  displays meaningful relationships with a number of concurrently measured performance variables and determinants. The index score can be further broken down into binary indicators of non-performance within each dimension in the manner of Alkire and Foster (2011). This yields rich information on the sources of inefficiency in SHGs.

## 6.1 Index Implementation

The index has been developed with the focus on ease of implementation. The analysis is conducted at the group level, the level at which SHPIs and development practitioners typically conduct regular monitoring and evaluation. The indicators forming the index are based on existing evaluation tools commonly used in practice and in research study, thereby allowing for the possibility of computing the index from prior data or with minimal modification to existing practices. The index relies as much as possible on objective data and reducing self-report bias.

The applicability of a theoretically sound and empirically informed general index such as  $I_3$  is wide. For example, it may be used in supplementing impact evaluations of SHGs with an understanding of the efficiency of groups involved, for SHPIs and policymakers who are interested in identifying strategies to im-

prove the efficiency of SHGs, in programs that are interested in identifying and involving the most efficient SHGs in program implementation, among other uses.

Preliminary regression analysis undertaken in section 5.5 provides an example of analysis procedures that can be used to determine future courses of action for implementors and inform policy. In the study sample, education level of the president of the group was found to be a strong positive influence on the group score. At the same time, age of the group was found to be significantly negatively associated with score, suggesting that, at least in the sample analyzed, older groups have tended to be less effective. In this sample, there appears to be no significant difference in the performance of government and NGO promoted groups. Further, determinants of individual dimension scores (in Table D.3), such as SHPI monitoring can help implementors address non-performance in specific dimensions.

## **6.2 Scope for further study**

The scope of the study is limited by data availability and is constrained to providing a methodological background for further analysis. The simple additive measure created needs to be further validated for concurrent and predictive validity through a comparison with other metrics of evaluation and expected future outcomes. Importantly there is need to implement the tool along with other shortlisted indicators in a specific context and Further reliability tests (such as

test-retest and inter-rater tests) are warranted for assessing the reliability of self-reported data from these groups and a larger sample size will add to the assessment of scalability across contexts.

The multidimensional representation of SHG performance allows for the addition of a fourth 'program experience' dimension in the event that the index is used within a specific program context or in order to test the suitability of an SHG for inclusion into a program. Indicators that reveal SHG performance in a specific area such as health or nutrition (as in the case of *Shakti Varta*) or in a particular set of skills such as community mobilization or food preparation that are deemed relevant within a context can be incorporated into the total score and analyzed in a similar manner. The validity of the index and its ability to meet the objectives of implementation within a specific context needs to be tested.

The study in its current scope does not attempt to impute or adjust for missing values in some or all of the indicators included in the index. As a result, index scores are computed only for 147 out of 170 SHGs. In circumstances where missing values are unavoidable and dropping observations with one or more missing values is not an option, the advantage of techniques such as imputation and matching percentiles (Foa and Tanner, 2012) can be explored.

Results from the logistic regression analysis suggest that further inquiry into determinants of group performance (as measured by the suggested index) can provide clarity on the effect of education level of the executive members and the age of the group on performance. Replications of the study in different contexts

can also enable an examination of the effect of the policy environment, incentive structure, location and other exogenous factors determining SHG efficiency.

Importantly, the contribution of the index is in laying the framework for an SHG evaluation tool that is informed by theory, determined by established methodology and validated by primary data. The index afford comparability across SHGs promoted by different SHPIs in different contexts and thus opens up the possibility of effective consolidation of existing programs and groups, as is being attempted in countries like India through programs like '*Shakti Varta*'. Given its multidimensional nature, the index developed in this study allows scope for further validation, refinement and expansion to suit multiple needs.

# Appendices

## APPENDIX A

### Descriptive Profile of Sample SHGs

Table A.1: Descriptive Profile of Sample SHG

<i>2.1.1 Group Formation</i>	No. of SHGs	% of SHGs
<b>Governmental Promoters</b>		
Under Mission Shakti Program	64	38
Under ICDS	64	38
Other Govt Program	12	7
<b>Non-Governmental Promoters</b>		
NGO	42	25
Microfinance Institution (MFI)	9	5
<b>Members Involved in Formation</b>	11	7
<i>2.1.2 Member Demographics</i>	No. of Women	% of Women
<b>Age</b>		
Less than 19 yrs	6	0
20-29 yrs	287	15
30-39 yrs	605	33
40-49 yrs	607	33
50 yrs and above	350	19
<b>Caste</b>		
SC	376	20
ST	809	44
OBC	608	33
General	55	3
<b>Related to other members within group</b>		



No	755	46
Yes	892	54
<b>Education Level</b>		
None	879	49
Lower than 5th Std	445	25
5th-8th	202	11
8th passed	137	8
10th passed	85	5
12th passed	20	1
Graduate	14	1
Post-graduate	1	0
Other	4	0
<b>Primary Income Source</b>		
Agriculture and allied activities	991	53
Wage labour	556	30
Self-employed	116	6
Forest produce	33	2
Salaried job	23	1
Pension	12	1
No source of income/Dependent	124	7
Other	5	0
<hr/>		
<i>2.1.3 Group Composition</i>	No. of SHGs	% of SHGs
<hr/>		
<b>Caste Composition of group</b>		
Single Caste Group	105	61
Two Castes	49	28
Three or more Castes	18	10
<b>Kinship within groups</b>	No.	Col%

No member is related to the other	42	28
At least 2 members are related to one another	108	72
<hr/>		
<i>2.1.4 Goals</i>	No. of SHGs	% of SHGs
<hr/>		
<b>Group Goals at Formation</b>		
Financial Access	67	40
Entrepreneurial Income Generation	128	76
Economic Empowerment	126	75
Political Empowerment	39	23
Social Development	68	40
Women's Empowerment	65	38
<b>Current Group Goals</b>		
Financial Access	55	33
Entrepreneurial Income Generation	132	78
Economic Empowerment	98	58
Political Empowerment	38	22
Social Development	90	53
Women's Empowerment	66	39
<hr/>		
<i>2.1.5 Lifespan and Size</i>	No. of SHGs	% of SHGs
<hr/>		
<b>SHG Age</b>		
Less than 5 yrs	24	14
5-10 yrs	51	30
10-15 yrs	77	45
15-20 yrs	18	11
<b>SHG has had at least one dropout</b>		
No	72	42
Yes	98	58

**Reason cited for dropout**

Migration	21	20
Marriage	20	19
Health	7	7
Age and Death	42	40
Discouragement from Household Members	18	17
Multiple Memberships	8	8
Not satisfied with group norms/procedure	11	11
Ineligibility and Default	11	11
Interested in availing other pro-poor benefits	1	1
Access to credit insufficient	2	2
Delays in receiving credit or bank linkage	3	3

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**2.1.6 Administration**

No. of SHGs

% of SHGs

---

**Appointment of Leadership**

Selection by Consensus	154	91
Election	16	9

**Rotation of Leadership**

No change since formation	101	60
At least 1 change since formation	68	40

**Savings Cycle**

Weekly	16	10
Fortnightly	11	7
Monthly	135	81
Quarterly	4	2
Do not save	1	1

**Meeting Cycle**

Weekly	22	13
--------	----	----

Fortnightly	24	14
Monthly	119	70
Quarterly	2	1
Do not save	3	2
<b>Regularity of Savings Collection</b>		
Highly irregular	11	7
Irregular	28	17
Regular	115	69
Highly regular	13	8
<b>Regularity of Meetings</b>		
Highly irregular	13	8
Irregular	33	20
Regular	110	65
Highly regular	13	8
<b>Member attendance (% of total members) at meetings</b>		
Less than 80% attended last two meetings	76	48
80% or more attended last two meetings	81	52
<b>Member awareness (% of total members) of group goals</b>		
50% or below	32	19
51-80%	79	47
81% and above	56	34
<b>Member awareness (% of total members) of group norms</b>		
50% or below	41	24
51-80%	73	43
81% and above	55	33
<b>Member participation (% of total members) in SHG decision-making and activity</b>		
50% or below	30	18

51-80%	63	37
81% and above	76	45

**No. of books maintained up-to-date**

0	66	43
1	12	8
2	7	5
3	19	12
4	24	16
5	26	17

**Access to books**

Members inspect books periodically	128	77
SHPI inspects books periodically	131	79

---

*2.1.7 Financial Discipline*

No. of SHGs      % of SHGs

---

**Financial Services Provided**

Savings	167	99
Credit	116	71
Insurance	8	5
Other financial services	9	5

**Savings Amount**

Below rs. 50	40	24
Rs. 50	71	42
Rs.51 - Rs.99	4	2
Rs. 100	45	27
Above Rs.100	8	5

**Group Assets**

Groups with savings at bank	168	99
Groups with cash in hand	90	53

Groups with fixed deposit at bank	13	8
Groups with deposit at their SHPI	42	25
Groups with physical assets	8	5
Groups with loans circulated internally	74	44
Groups that have distributed refunds to members	23	14
<b>Group Liabilities</b>		
Groups with loans received from bank	60	35
<b>Loans overdue</b>		
More than 30 days	23	14
More than 60 days	49	29
More than 365 days	37	22
<hr/>		
<i>2.1.8 Activities</i>	No. of SHGs	% of SHGs
<hr/>		
<b>Income Generating Activities</b>		
Entrepreneurial Small Business	66	40
Marketing of Produce	40	25
Public Distribution System	22	14
Mid Day Meal Scheme	41	25
ICDS or other Nutrition Program	81	50
Drinking Water Provision Program	81	50
Total Sanitation Campaign or other Sanitation Program	84	52
<b>Non-Income Generating Activities</b>		
Campaign against Domestic Violence	49	30
Campaign against other social evils	47	30
Conflict Resolution and Problem Solving within Village	44	28
Health Promotion Program	87	54
Education Promotion Program	64	39
<hr/>		
<i>2.1.9 Initiative and Recognition</i>	No. of SHGs	% of SHGs

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<b>Capacity-building</b>		
SHG has undergone a training or capacity building exercise	88	52
SHG has organized training for other groups or community	10	6
<b>SHG Recognition</b>		
SHG has been graded	103	62
SHG has received awards	25	15
Has helped revive other groups	50	31
SHG has rallied community around common issues	82	49
<b>Interaction with SHG Federation</b>		
SHG is aware of Federation	137	83
SHG is registered with Federation	69	50
SHG has received funds from Federation	61	44
SHG has received training from Federation	47	34
<hr/>		
<i>2.1.10 Constraints to SHG performance</i>	No. of SHGs	% of SHGs
<hr/>		
Member interest and coordination	45	32
Time and other obligations	50	36
Funding	13	9
Materials and other resources	22	16
Knowledge and skill	62	45
Lack of support from Govt or SHPI	69	50
Negative reaction from community	39	28
Negative reaction from family	32	23
<hr/>		

Table A.2: Descriptive Statistics of Key Indicators

<i>2.1.5 Lifespan and Size</i>	No. of SHGs	Mean	Std. Dev	Skewness
SHG Age	170	9.511765	3.946743	-.1308425
No. of Members	170	11.65294	2.14631	1.665447
No. of dropouts	170	1.323529	1.895504	2.687325
<i>2.1.6 Administration</i>				
No. of duties overseen by President	170	2.882353	1.253745	.2952204
No. of duties overseen by Secretary	170	2.376471	1.156167	.2679891
No. of duties overseen by Treasurer	170	.4294118	.8959242	2.465706
<i>2.1.7 Financial discipline</i>				
Value of Savings with Bank	168	35051.68	49107.13	7.739672
Value of Loans from Bank	67	84150.04	83525.7	1.732703
Savings Installment	168	67.52976	63.1342	5.433862
<i>2.1.8 Activities</i>				
No. of income-generating activities undertaken	170	2.441176	1.94284	.3270244
No. of non-income-generating activities undertaken	170	1.882353	1.620225	.6765233



## APPENDIX B

### Theoretical Background for Shortlisted Multidimensional Indicators

Table B.1: Dimensions, Indicators and References

Dimension	Theoretical Reference	Indicators shortlisted	Indicator reference
INTERNAL	Roever (2006)		
<i>1. Cooperation</i>	<p><i>Calvert (1995)</i></p> <p>Baland and Platteau (1996), Grootaert and Narayan (2000), Wade (1988), Crowley et al (2006)</p>	<ul style="list-style-type: none"> <li>• Members are aware of group norms</li> <li>• Members participate actively in SHG decision-making and activities</li> <li>• Attendance in the last two meetings</li> <li>• Members meet on a regular basis</li> </ul>	<p>World Bank, CRI, Corp Bank, Holy Cross</p> <p>World Bank, CRI, BASIX, Corp Bank, Holy Cross, Chaitanya</p> <p>NABARD, CRI, MYRADA, BASIX, Corp Bank, Holy Cross, Chaitanya, CARE and DRDA, Sa-Dhan</p> <p>Feigenberg et al (2014), World Bank, NABARD, MYRADA, Enable (2012), BASIX, Holy Cross, DRDA, Sa-Dhan</p>

Table B.1: Dimenions, Indicators and References

Dimension	Theoretical Reference	Indicators shortlisted	Indicator reference
		<ul style="list-style-type: none"> <li data-bbox="808 495 1117 575">• Documentation maintained up to date</li> <li data-bbox="808 722 1105 802">• Has not defaulted on loans</li> <li data-bbox="808 949 1081 1029">• Members save on a regular basis</li> <li data-bbox="808 1176 1146 1255">• Leadership change since formation</li> <li data-bbox="808 1352 1105 1482">• Members access SHG documents for use or verification</li> </ul>	<p data-bbox="1195 495 1503 680">CRI, MYRADA, BASIX, Corp Bank, Holy Cross, Chaitanya, CARE, DRDA, Sa-Dhan</p> <p data-bbox="1195 722 1516 907">Parida and Sinha (2010), NABARD, CRI, MYRADA, Enable (2012), BASIX, Chaitanya, Sa-Dhan</p> <p data-bbox="1195 949 1536 1134">World Bank, CRI, MYRADA, BASIX, Corp Bank, Holy Cross, Chaitanya, CARE, DRDA, Sa-Dhan</p> <p data-bbox="1195 1176 1516 1310">NABARD, CRI, MYRADA, Enable (2012), BASIX, Sa-Dhan</p> <p data-bbox="1195 1352 1360 1377">BASIX, CARE</p>
<i>2. Coordination</i>	<i>Calvert (1995)</i>		

Table B.1: Dimenions, Indicators and References

Dimension	Theoretical Reference	Indicators shortlisted	Indicator reference
	Baland and Platteau (1996), Wade (1988) Grootaert and Narayan (2000) Manfred and Zeller (1997), Agarwal and Goyal (2001), Walker and McCarthy (2006)	<ul style="list-style-type: none"> <li>• Activities undertaken</li> <li>• Motivated to undertake activity on own accord</li> <li>• Dropouts from the group</li> <li>• Total value of group savings</li> </ul>	<p>CRI, MYRADA, BASIX, Corp Bank, Holy Cross, Chaitanya, CARE, DRDA, Sa-Dhan</p> <p>Enable (2012)</p> <p>NABARD</p> <p>Parida and Sinha (2010), CRI, Enable (2012), BASIX, Corp Bank, Holy Cross, Chaitanya, CARE</p>
EXTERNAL	Roever (2006)		
<i>1. Engagement Experience</i>	Baland and Platteau (1996)	<ul style="list-style-type: none"> <li>• Revived another SHG</li> <li>• Organized community around common issues</li> </ul>	<p>Enable (2012)</p> <p>Enable (2012), BASIX, Holy Cross</p>

Table B.1: Dimenions, Indicators and References

Dimension	Theoretical Reference	Indicators shortlisted	Indicator reference
		<ul style="list-style-type: none"> <li>Actively involved with SHG Federation</li> </ul>	Parida and Sinha (2010), CRI, MYRADA, Sa-Dhan
<i>2. Program Specific Experience</i>		<i>Not considered for this study</i>	
DETERMINANTS			
<i>1. Institutional structure</i>	Baland and Platteau (1996), Ostrom (1990)	<ul style="list-style-type: none"> <li>Self Help Promoting Insitution (SHPI)</li> <li>SHPI incentivizes group</li> </ul>	Deininger and Liu (2009)
<i>2. Cohesion</i>	Baland and Platteau (1996), Wade (1988), Grootaert and Narayan (2000), Manfred and Zeller (1997), Agarwal and Goyal (2001), Walker and McCarthy (2006) and others	<ul style="list-style-type: none"> <li>Age of group</li> <li>Caste heterogeneity</li> <li>Members work together outside of the SHG</li> <li>Group size</li> </ul>	BASIX, DRDA  World Bank, NABARD, CRI, BASIX, Holy Cross, DRDA  NABARD, BASIX, Corp Bank

Table B.1: Dimenions, Indicators and References

Dimension	Theoretical Reference	Indicators shortlisted	Indicator reference
3. <i>Agency</i>	Baland, Somanathan and Vandewalle (2007)	<ul style="list-style-type: none"> <li>• Members are politically active</li> <li>• Mean education level of members</li> <li>• Members have undergone training</li> </ul>	<p>Enable (2012)</p> <p>BASIX, Holy Cross, DRDA</p> <p>Kaboski and Townsend (2005), MYRADA, Chaitanya</p>

APPENDIX C

Validity and Reliability Tests

Table C.1: Polychoric and tetrachoric correlations (dichotomous form) of shortlisted indicators

	(cp1)	(cp2)	(cp3)	(cp4)	(cp5)	(cp6)	(cp7)	(cp8)	(cp9)	(cr1)	(cr2)	(cr3)	(cr4)
<i>Polychoric (bottom triangle) and Kendall Tau-b (top Triangle) Coefficients</i>													
Awareness (cp1)	1	0.268	0.534*	0.048	0.23	-0.017	0.030	0.225	0.383*	-0.095	0.072	0.092	-0.044
Attendance (cp2)	0.385	1	0.279	0.110	0.079	0.094	0.142	0.132	0.027	0.017	0.024	0.053	0.011
Participation (cp3)	0.696	0.393	1	0.325*	0.100	-0.029	0.210	0.201	0.314*	-0.060	0.096	0.016	-0.065
Meeting Reg (cp4)	0.036	0.174	0.451	1	-0.005	0.016	0.358*	-0.158	0.126	0.161	0.156	-0.138	-0.063
Documentation Reg (cp5)	0.338	0.124	0.162	-0.031	1	0.171	0.040	0.058	0.312*	0.154	0.058	0.094	-0.045
No Overdue Loan (cp6)	-0.029	0.152	-0.041	-0.007	0.276	1	0.088	-0.138	0.023	0.058	0.089	-0.071	-0.015
Saving Reg (cp7)	0.053	0.213	0.316	0.459	0.060	0.102	1	-0.062	0.127	0.131	0.155	-0.046	0.174
Leader Rotation (cp8)	0.355	0.204	0.334	-0.225	0.089	-0.211	-0.074	1	0.143	-0.005	-0.087	0.089	0.052
Member Doc Access (cp9)	0.597	0.047	0.493	0.202	0.532	0.040	0.204	0.296	1.000	0.04	-0.016	0.003	0.041
No. of Activities (cr1)	-0.120	0.022	-0.053	0.259	0.256	0.075	0.236	-0.049	0.092	1	0.335*	0.033	0.094
Self-Motivated (cr2)	0.140	0.058	0.162	0.224	0.159	0.164	0.272	-0.133	0.010	0.598	1	-0.009	0.027
Dropouts (cr3)	0.168	0.088	0.046	-0.212	0.144	-0.103	-0.087	0.157	0.032	0.064	0.008	1	0.046
Total Savings (cr4)	-0.118	0.135	-0.145	-0.231	-0.094	-0.061	0.318	0.095	0.164	0.113	0.144	0.162	1

*Tetrachoric Coefficients (for dichotomous form)*

Awareness (cp1)	1																			
Attendance (cp2)	0.555*	1																		
Participation (cp3)	0.752*	0.487*	1																	
Meeting Reg (cp4)	0.034	0.260	0.272	1																
Documentation Reg (cp5)	0.284	0.124	0.058	0.124	1															
No Overdue Loan (cp6)	0.066	0.152	-0.066	0.212	0.276	1														
Saving Reg (cp7)	0.010	0.135	0.439*	0.551*	0.116	0.102	1													
Leader Rotation (cp8)	0.324*	0.210	0.243	-0.111	0.053	-0.249	-0.242	1												
Member Doc Access (cp9)	0.541*	0.047	0.449*	0.241	0.533*	0.040	0.201	0.191	1											
No. of Activities (cr1)	-0.146	0.075	-0.193	0.186	0.286	0.170	0.236	-0.101	0.097	1										
Self-Motivated (cr2)	0.095	0.040	0.130	0.260	0.011	0.174	0.295	-0.152	-0.057	0.397*	1									
Dropouts (cr3)	0.052	0.053	0.063	-0.078	-0.188	0.190	0.159	-0.003	0.085	0.011	-0.019	1								
Total Savings (cr4)	-0.041	0.005	-0.162	0.243	-0.046	0.063	-0.089	0.130	0.154	0.056	-0.099	1								

Table C.2: Factor Loadings for Exploratory Factor Analysis with all shortlisted indicators

	Factor1	Factor2	Factor3	Uniqueness
Awareness (cp1)	0.8796	-0.1442	0.0684	0.2008
Attendance (cp2)	0.7261	-0.0279	0.2707	0.3987
Participation (cp3)	0.8442	0.0718	-0.1505	0.2595
No Overdue Loan (cp6)	0.1338	-0.0864	0.7706	0.3809
Meeting Reg (cp4)	0.2857	0.3316	0.2085	0.7650
Documentation Reg (cp5)	0.1890	0.0198	0.3502	0.8413
No. of Activities (cr1)	-0.2452	0.4437	0.5445	0.4465
Self-Motivated (cr2)	0.0760	0.6850	0.1057	0.5138
Dropouts (cr3)	0.0210	-0.1862	0.2141	0.9191
SHG Engagement (ee1)	0.1355	0.5894	-0.2663	0.5633
Community Engagement (ee2)	-0.2097	0.7848	-0.0126	0.3400
Fed Engagement (ee3)	-0.0903	0.2663	-0.1960	0.8825



Table C.3: Factor Loadings for Exploratory Factor Analysis with alternate activity indicator

	Factor1	Factor2	Factor3	Uniqueness
Awareness (cp1)	0.8957	-0.1046	0.1061	0.1756
Attendance (cp2)	0.7211	-0.0369	0.2640	0.4089
Participation (cp3)	0.8788	0.0965	-0.1860	0.1839
No Overdue Loan (cp6)	0.1404	-0.1325	0.7293	0.4309
Meeting Reg (cp4)	0.2781	0.3971	0.3038	0.6727
Documentation Reg (cp5)	0.1475	0.0255	0.5305	0.6961
Entrepreneurial activity (cr4)	-0.2708	0.1948	0.4629	0.6744
Public welfare activity (cr5)	-0.1999	0.3830	0.5326	0.5296
Self-Motivated (cr2)	0.0706	0.7723	0.0941	0.3897
Dropouts (cr3)	0.0692	-0.2391	0.0709	0.9330
SHG Engagement (ee1)	0.0998	0.5941	-0.2128	0.5918
Community Engagement (ee2)	-0.2218	0.7031	-0.0191	0.4561
Fed Engagement (ee3)	-0.1158	0.2986	-0.1815	0.8645

Table C.4: Polychoric (bottom triangle) and Kendall's Tau-b (top triangle) correlations between dimension scores

	Cooperation Score	Coordination Score	Gen Engagement Exp Score
Cooperation Score	1	0.026	-0.021
Coordination Score	0.071	1	0.0235
Gen Engagement Exp Score	-0.027	0.034	1

Table C.5: Comparison of Kuder-Richardson Formula 20 for computed indices

Dimension/Indicators	KR-20	Item-test correlation	Average item diffi- culty
<i>All shortlisted variables</i>			
Cooperation Indicators (6)	0.5568	0.2558	0.5589
Coordination Indicators (3)	0.1576	0.0754	0.3873
Gen Engagement Exp Indicators (3)	0.3455	0.1947	0.2828
<i>I<sub>1</sub> : Theory-based Index</i>			
Cooperation Indicators (6)	0.5503	0.2911	0.5266
Coordination Indicators (3)	0.2392	0.1295	0.3801
Gen Engagement Exp Indicators	0.3455	0.1947	0.2828
All indicators in I <sub>1</sub>	0.3963	0.1382	0.4466
<i>I<sub>2</sub> : EFA-based Index</i>			
Cooperation Indicators (6)	0.6610	0.4667	0.4331
Coordination Indicators (3)	0.2965	0.1664	0.5335
Gen Engagement Exp Indicators	0.5415	0.3491	0.3683
All indicators in I <sub>2</sub>	0.5027	0.2281	0.4328
<i>I<sub>3</sub> : Alternate z Index</i>			
Cooperation Indicators (3)	0.6610	0.4667	0.4331
Coordination Indicators (4)	0.3592	0.1862	0.6034
Gen Engagement Exp Indicators (3)	0.5415	0.3491	0.3683
All indicators	0.5215	0.2175	0.4762
Cooperation Indicators (3)	0.6610	0.4667	0.4331

Coordination Indicators (3)	0.3057	0.1657	0.6057
Gen Engagement Exp Indicators (3)	0.5415	0.3491	0.3683
All indicators in $I_3$	0.5009	0.2159	0.4649

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Table C.6: Relationships with concurrent variables

Concurrent variables	Category	Mean weighted Total score	Measure of association	Test Statistic
SHG has not been dormant for more than a year	No	4.698163	Mann-Whitney	0.197
	Yes	4.603175		
SHG listed developmental goals at formation	No	4.197531	Mann-Whitney	-1.453
	Yes	4.794795		
SHG listed developmental goals at time of survey	No	4.150327	Mann-Whitney	-1.540
	Yes	4.798427		
Regularly holds meetings and collects savings	No	3.89899	Mann-Whitney	-3.186***
	Yes	5.096619		
SHG constrained by poor member interest and coordination	Yes	3.611111	Mann-Whitney	4.003***
	No	5.3070181		
Members access SHG documents	No	3.838384	Mann-Whitney	-2.468*
	Yes	4.861111		
There have been voluntary dropouts from the group	Yes	4.31746	Mann-Whitney	1.494
	No	5.050505		
Appointment of executive members is by election	No	4.699589	Mann-Whitney	0.927
	Yes	4.074074		

There has been at least one change in leadership since formation	No	4.559387	Mann-Whitney	-0.678
	Yes	4.80226		
Holds higher than average total savings	No	4.623244	Mann-Whitney	0.111
	Yes	4.651601		
SHG has undergone some form of training	No	4.55099	Mann-Whitney	-0.511
	Yes	4.744745		
SHG has received award/recognition	No	4.515556	Mann-Whitney	-2.050*
	Yes	5.449736		
Good attendance in Shakti Varta	No	4.59596	Mann-Whitney	1.930
	Yes	3.619048		

Table C.7: Relationships with concurrent variables

Potential Determinants	Category	Mean weighted total score	Measure of association	Test statistic
Self Help Promoting Insitution	Govt only	4.432235	Mann-Whitney	-1.416
	NGO inv	4.949495		
Caste hetrogoenous	No	4.854498	Mann-Whitney	1.280
	Yes	4.305556		
Group has members below age 30	No	4.354355	Mann-Whitney	-1.004
	Yes	4.77193		
Group has members active in local govt	No	4.475309	Mann-Whitney	-1.462
	Yes	5.128205		
Group's members work together outside SHG	No	4.195402	Mann-Whitney	-2.036
	Yes	4.94382		
SHPI monitoring score	0	4.722222	Kruskal-Wallis	2.345
	1	4.368687		
	2	4.639376		
	3	5.084175		
	4	4.222222		
Education level of President	None	3.809524	Kruskal-Wallis	14.208*

Pre-primary	4.736842	
Primary	4.962963	
Middle	5.486111	
Lower	4.333334	
secondary		
Higher	6.388889	
secondary		
Tertiary	10	
Age		Spearman -0.2140**
Savings		Spearman -0.0267



APPENDIX D

Table D.1: Ordered Logistic Regression of  $I_3$  Total Score - Robustness checks for Edu and Age

	Edu Recode (1) b/se	Edu Drop (2) b/se	Age Recode (3) b/se	Age Drop (4) b/se
NGO Involvement	-0.058 -0.36	-0.099 -0.36	-0.027 -0.36	-0.067 -0.36
Group size (No.)	-0.02 -0.07	-0.023 -0.07	-0.012 -0.07	-0.021 -0.07
Group age (Yrs)	-0.130** -0.05	-0.129** -0.05	-0.530* -0.21	-0.124* -0.05
Caste heterogeneity present	-0.374 -0.35	-0.343 -0.35	-0.357 -0.35	-0.361 -0.35
SHPI monitoring	0.262 -0.18	0.219 -0.18	0.279 -0.18	0.26 -0.18
Edu level of President	0.280* -0.12	0.240* -0.12	0.302* -0.12	0.289* -0.12
Members below 30	0.113 -0.4	0.091 -0.4	0.118 -0.4	0.113 -0.4
Members politically active	0.64 -0.37	0.581 -0.37	0.637 -0.37	0.63 -0.37
Members work together	0.678 -0.35	0.641 -0.35	0.659 -0.35	0.677 -0.35
SHG reports developmental goals	0.747 -0.39	0.736 -0.39	0.678 -0.39	0.737 -0.39
N	119	118	119	117
R-sqr	0.058	0.051	0.055	0.056
D-Fre	10	10	10	10
Chi-sq	27.991	24.072	26.779	26.714
p-val	0.002 <sup>119</sup>	0.007	0.003	0.003

\* p&lt;0.05, \*\* p&lt;0.01, \*\*\* p&lt;0.001

Table D.2: Logistic and Ordered Logistic Regression of Multiple Forms of Dependent Variable  $I_3$ 

	Quartiles (1)	Total Perf Dimen- sions (2)	Non- Cooperation Non-Perf (3)	Coordination Non-Perf (4)	Ext Engagement Non-perf (4)	En-
	b/se	b/se	b/se	b/se	b/se	
NGO Involvement	0.484	-0.103	0.111	-0.999	0.055	
	-0.41	-0.4	-0.47	-0.94	-0.45	
Group size (No.)	0.035	0.131	0.134	-0.02	0.058	
	-0.09	-0.08	-0.09	-0.16	-0.1	
Group age (Yrs)	-0.138*	0.095	0.081	0.241	0.015	
	-0.05	-0.05	-0.06	-0.13	-0.06	
Caste heterogeneity present	-0.418	0.605	-0.165	2.273*	0.713	
	-0.4	-0.38	-0.46	-0.93	-0.43	
SHPI monitoring	0.381	-0.426*	-0.212	0.03	-0.546*	
	-0.21	-0.21	-0.23	-0.43	-0.24	
Edu level of President	0.363**	-0.166	-0.327	-0.438	0.096	
	-0.14	-0.14	-0.17	-0.34	-0.15	
Members below 30	0.308	-0.568	-0.686	0.336	-0.43	
	-0.47	-0.44	-0.51	-0.97	-0.5	
Members politically active	0.308	-1.088*	-0.108	-2.22	-1.758**	
	-0.44	-0.44	-0.51	-1.5	-0.56	
Members work together	0.332	-0.624	-0.267	-0.025	-0.701	
	-0.4	-0.38	-0.44	-0.8	-0.43	
SHG reports developmental goals	0.954	-0.522	0.248	-2.643**	-0.423	
	-0.49	-0.43	-0.54	-0.94	-0.49	
N	119	119	119	119	119	
R-sqr	0.116	0.102	0.096	0.341	0.143	
D-Fre	10	120 10	10	10	10	
Chi-sq	27.383	26.607	13.831	25.044	22.915	
p-val	0.002	0.003	0.181	0.005	0.011	

\* p&lt;0.05,

\*\* p&lt;0.01, \*\*\* p&lt;0.001

Table D.3: Ordered Logistic Regression of  $I_3$  Total Score - Sensitivity to Independent Variable definitions

	SHPI Mon replaced (1) b/se	Edu replaced (2) b/se	Mem bel 30 Replaced (3) b/se
NGO Involvement	-0.065 -0.41	0.121 -0.34	-0.014 -0.36
Group size (No.)	-0.025 -0.08	-0.006 -0.07	-0.029 -0.08
Group age (Yrs)	-0.137* -0.06	-0.110* -0.04	-0.153** -0.05
Caste heterogeneity present	-0.46 -0.4	-0.353 -0.33	-0.404 -0.35
SHPI monitoring	-0.348 -0.39	0.233 -0.17	0.207 -0.18
Edu level of President	0.266 -0.15	0.508** -0.19	0.302* -0.13
Members below 30	0.038 -0.45	0.084 -0.36	0.035 -0.03
Members politically active	0.814 -0.42	0.511 -0.35	0.682 -0.37
Members work together	0.973* -0.4	0.661* -0.33	0.648 -0.35
SHG reports developmental goals	0.577 -0.52	0.768* -0.39	0.722 -0.4
N	93	129	116
R-sqr	0.07	0.058	0.059
D-Fre	10	10	10
Chi-sq	26.335	121	30.045
p-val	0.003	0.001	0.002

\*  $p < 0.05$ ,

\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table D.4: Logistic Regression of Non-Performance on Total Score

	Cooperation Non- Performance (1)	Coordination Non- Performance (2)	External Engage- ment Experience Non-Performance (3)
	b/se	b/se	b/se
Total Score $I_3$	-0.622***	-1.466***	-0.751***
	-0.12	-0.35	-0.13
Constant	1.849***	1.785*	2.628***
	-0.49	-0.76	-0.54
N	157	164	162
R-sqr	0.205	0.461	0.264
D-Fre	1	1	1
Chi-sq	40.616	44.087	56.056
p-val	0	0	0

\*  $p < 0.05$ ,

\*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## APPENDIX E

**Survey Tool Used in Study** CONSENT FORM: (PLEASE READ ALOUD) We are staff of Shakti Varta program and we are conducting a survey of Self Help Groups in collaboration with TCi-Cornell University, USA for an independent research study. We would like to interview at least 3 members of your group including your President or other Executive Member. The survey will take approximately 45 minutes. Your name and contact number will be recorded at the end of the interview in order for us to contact you in case of questions. All personal names, SHG name and details shall be kept confidential and will not be used to identify you. The survey is voluntary and you may choose to not answer or stop the survey at any point. You can contact Samyuktha Kannan, Cornell University (9841816131) in case of any questions or issues relating to the survey. Do you consent to participate in the survey?

### 1. GROUP CONSTITUTION

1.1 Month and Year of formation of SHG:

1.2 No. of months of operation completed since formation of SHG:

1.3 Who formed the SHG? Mission Shakti-1, AWW/ICDS-2, NGO-3, MFI-4, Members-5, Other

1.4 Write the goal / objectives of SHG (refer the Resolution Book or else ask and write the same)

1.5 No. of members in the SHG at formation:

1.6 No of members in the SHG currently:

1.7 Members details

1.8 Roles and Responsibilities of President, Secretary and Treasurer

1.9 Member inclusion criteria

1.10 Total number of dropouts since inception:

1.11 Reasons cited for dropout:

Migration-1, Marriage-2, Health Reasons-3, Age and death-4, Negative attitude of HH Member-5, Multiple memberships-6, Group norms and procedures-7, Ineligible-8, To avail other pro-poor

benefits 9, Small volume of loans 10, Delay in getting bank linkage 11, Other

1.12 Number of times change in leadership since inception:

1.13 How well did you know group members at the time of formation?

Not at all familiar -1, Slightly familiar-2, Moderately familiar-3, Very familiar-4, Extremely familiar-5

1.14 How well do you know group members now?

Not at all familiar -1, Slightly familiar-2, Moderately familiar-3, Very familiar-4, Extremely familiar-5

1.15 What are some of the ways you regularly interact with group members outside of the SHG?

Involved in another SHG together-1, Involved in work/income generating activity together-2, informally in neighbourhood -3, family gatherings-4, village gatherings-5, at school/awc/ration shop-6, Other

## 2. ORGANISATIONAL DISCIPLINE AND SYSTEMS

2.1 Does the SHG have operational norms / resolutions to manage the day to day activities?

Yes-1, No-2

2.2 Percentage of members have clarity on the goals and objectives of SHG: 50% or Below-1, 51 to 80%-2, 81% or Above-3

2.3 Percentage of members are aware of the key norms / guidelines of SHG: 50% or Below-1, 51 to 80%-2, 81% or Above-3

2.4 Percentage of members are actively involved in the activities of SHG: 50% or Below-1, 51 to 80%-2, 81% or Above-3

2.5 Does the SHG conduct group meetings?

Yes-1, No-2

2.6 Frequency of group meeting: Weekly-1, Fortnightly-2, Monthly-3, Quarterly-4, Half yearly-5, Annually-6, Not met at all-7

2.7 Regularity of meeting:

Highly irregular-1, Irregular-2, Regular-3, Highly Regular-4

2.8 Percentage of attendance in the last two meetings:

50% or Below-1, 51 to 80%-2, 81% or Above-3

2.9 Key points discussed in the last two meetings:

2.10 Does the SHG collect savings?

Yes-1, No-2

2.11 Frequency of savings: Weekly-1, Fortnightly-2, Monthly-3, Quarterly-4, Half yearly-5, Annually-6, Not met at all-7

2.12 Regularity of savings: Highly irregular-1, Irregular-2, Regular-3, Highly Regular-4

2.13 Average amount of savings per member per cycle:

2.14 Book Keeping / Documentation by SHG

Sl. No., Record, Record Maintained (Yes-1, No-2), Updated-1, Not Updated-2, Error and Missing Information (Yes-1, No-2), Person in-charge (Pres-1, Secy-2, Treasurer-3, Other-4)

1 Minutes Book

2 Resolution Book

3 Savings Ledger

4 Loan Ledger/Register

5 Cash Book

6 Other

2.15 Do other members access/inspect books?

Yes-1, No-2

2.16 Do other organizations SHPI or Govt worker access books?

Yes-1, No-2

2.17 Has the SHG ever been graded on quality parameters?

Yes-1, No-2

2.18 Organization and grade received



### 3. FINANCIAL MANAGEMENT AND PERFORMANCE

3.1 Type of financial services provided by the SHG:

Savings-1, Loan-2, Insurance-3, Any Other

3.2 Assets and Liabilities with the SHG:

3.3 Portfolio at risk: (due but not yet paid)

3.4 Source of other funds generated by SHG:

### 4. GOALS AND OBJECTIVES

4.1 With what goals did you start out as a SHG?

Financial services-1, Business/income generation-2, Economic empowerment-3, Political empowerment-4 Social development-5, Womens empowerment-6, Other-7

4.2 What are your current goals as an SHG?

Financial services-1, Business/income generation-2, Economic empowerment-3, Political empowerment-4, Social development-5, Womens empowerment-6, Other-7

4.3 What are individual member goals from being a part of an SHG?

Financial services-1, Business/income generation-2, Economic empowerment-3, Political empowerment-4, Social development-5, Womens empowerment-6, Other-7

4.4 Do you share common interests with other SHGs in your village?

Yes-1, No-2

If the answer to Q 4.4 is Yes, what are these interests?

### 5. TRAINING AND CAPACITY

5.1 Has the members of SHG undergone any training?

Yes-1, No-2

5.2 If answer to Q. No. 5.1 is Yes, give details about the training attended:

5.3 Number of women from SHG who ran for office/been elected to a Panchayati Raj Institution (Sarpanch/Village Council etc)

5.4 Number of women from SHG who have close family (same Household) who ran for office/been elected to a Panchayati Raj Institution (Sarpanch/Village Council/Ward Member etc)

5.5 Number of women from SHG who actively participate in Panchayat (attend and make suggestions etc)

5.6 Number of women from SHG who CURRENTLY ARE OR HAVE BEEN been Govt School Teacher/AWW/ANM/ASHA

## 6. SOCIAL ACTIVITIES AND SERVICES

6.1 Type of other activities undertaken by SHG:

Undertaken Yes-1, No-2,

Who motivated? SHPI(Self Help Promoting Institution)-1, ANM/AWW/ASHA-2, Mission Shakti Officer-3, Government Department-4, NGO-5, PRI-6, Own Self-7, Other SHGs-8, Other -9

1) Training / Capacity Building

2) Health promotion

3) Income generation

4) Nutrition / ICDS

5) Public Distribution System

6) Drinking Water

7) Marketing

8) Sanitation

9) Addressing Domestic Violence

10) Education

11) Conflict resolution and problem solving

12) Mid-day Meal

13) Addressing other social issues (alcoholism, child labour, gender sensitization)

14) Other

6.2 Has the SHG organized any training program?

Yes-1, No-2

If answer to Q. No. 6.2 is Yes, give details about any training program organized by the SHG:

6.3 Has the SHG received any award or recognition?

Yes-1, No-2

If answer to Q. No. 6.3 is Yes, specify the award or recognition received by the SHG:

6.4 Is the SHG directly involved or it has any prior experience in community organization?

Yes-1, No-2

If the answer to 6.4 is Yes, give details about the role played by the SHG:

6.5 Has the SHG been involved in setting up of new SHGs or reviving disfunction groups?

6.6 Linkage of SHG with various development programs / schemes (BOTH GOVT AND NGO)

6.7 Are you aware of the SHG Federation in your GP or Block?

Yes-1, No-2

6.8 If the answer to 6.7 is Yes, what has been your interaction with the Federation?

## 7. CHANGES SINCE BECOMING AN ACTIVE SHG MEMBER

7.1 At the SHG Level:

7.2 At the Village Level:

7.3 At the Household Level:

7.4 At a personal level:

## 8. GENERAL FEEDBACK

8.1 What are constraints of the SHG in undertaking further social activities and community

mobilization?

Money-1, Time/other obligations-2, Materials and other resources-3, Knowledge and Skills-4, Lack of support from Govt/Institutions-5, Negative reaction from Community-6, Negative reaction from household members-7, Lack of coordination/interest among members-8, Other

8.2 What can SHG Federation do to remove these constraints?

8.3 What are the SHGs future priorities

9. PERTAINING TO SHAKTI VARTA - Not conducted on full sample

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