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# Women Empowerment through Participation in Self-Help Groups in Bihar, India: A Partial Least Squares Structural Equation Modelling Approach

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**ABSTRACT**

This study makes a modest attempt to examine the impact of participation in self-help groups (SHGs) on women's empowerment, mainly economic, social, and psychological aspects in Bihar. Led by the JEEViKA initiative, the SHG movement in Bihar has, particularly over the past decade, spread large-scale throughout the rural areas. To put it the other way round, the main motivation leading women to join SHGs is economic benefit. Women who join an SHG are connected to formal financial systems, make savings by using a group account which offers higher interest rates than individual accounts, borrow money from other members at low interest rates, and use government schemes as well as credit institutions for their credit needs. Now this model has profound implications for state socio-economic development, gender equality and poverty reduction. Self-Help Groups that consist mainly of village women from poor backgrounds are important institutional platforms enabling women to overcome the limitations associated with a traditional rural economy. Here, in this research, primary respondents were members of Self Help from the four blocks under Muzaffarpur district and four blocks in Patna District of Bihar State in India. Partial Least Squares structural equation modelling technique has been employed to estimate the relationship. The PLS-SEM results reveal that there is a significant and positive impact of the level of participation of women in SHGs' activities on their economic, social, and psychosocial empowerment and their overall empowerment as well. Thus, state government and supporting agencies should encourage and organise awareness programs towards more active participation in the SHGs' activities for further strengthening women's empowerment.

**Keywords:** Self-Help Groups, Women Empowerment, Partial Least Squares Structural Equation Modelling, JEEViKA, Bihar
**JEL Classifications:** J16, O15, I38, D63

## 1. INTRODUCTION

Empowerment of women is an important aspect recognised as a key element in the development of economies, which is vital for achieving sustainable development goals, as the fifth sustainable development goal (SDG5) reflects that gender equality and women's empowerment are crucial for sustainable development. However, inclusive women's empowerment is still a pressing challenge despite global recognition. A gender gap of 31.6% has been shown according to The Global Gender Gap Report (2023).

In developing countries, various initiatives are underway to tackle gender disparities and the development of women. In India, the government launched self-help groups as a collective strategy for empowering women through offering access to financial services like savings and credit (Mayoux, 2001). Mayoux (2000) also elaborated that the use of credit and savings for financial activities generates assets and income. This leads to an upsurge in consumption standards (Rahman, 1986) and, more significantly, it lessens the susceptibility of low-income families by stabilising periodic variations in their earnings and consumption patterns. Many agencies are trying to help women, like banks, non-

governmental organisations and the government itself, but SHGs have demonstrated one of the most effective pathways for the development of women in India (Gupta, 2021; Jakimow and Kilby, 2006). SHGs are generally formed of 10-20 marginalised and economically weaker women from the same community who accumulate their savings into a common account. This process not only helps them create financial resources and mutual support but also fosters empowerment (Arunkumar et al., 2016; Brody et al., 2017; Gupta and Rathore, 2021; Swain and Wallentin, 2009). The SHGs model has not only improved the health, income and quality of education among its members and their family members (Vasimalai and Narender, 2007) but also creates mechanisms like peer monitoring leading to better loan recoveries (Stiglitz, 1993).

The Economic Survey 2022-2023 highlights that there are nearly 12 million self-help groups (SHGs) in India, with an impressive 88% consisting solely of women. This is the largest microfinance initiative in the world. Microfinance plays an essential role in women's empowerment in developing nations (Mahato et al., 2023).

Among their various programs, SHGs also facilitate the flow of information across groups and between organisations. Members are trained to work for their communities or to become community leaders. Hence, after training, people selected by a consortium "association" may initiate projects that will affect millions of persons even though their policy-making power is limited. It is autonomous largely due to the fact that there are few guidelines governing it, except its general framework--its rules and regulations allow for relatively spontaneous and flexible development. The organ that makes decisions is composed not only of elected members but also of those who are chosen by doing work. No matter how long they have been working with this under-the-surface organisation or what their status in life might be, they all have equal rights to elect or be elected. Every subscribed person in an SHG is a voting member. The demographic composition of SHGs varies wildly depending on region and ethnic group. Despite this, every group member is generally free to participate in whatever training sessions or workshops are happening around him/her, since all members have voting rights on every issue, although access to these services will depend largely on his or her position within the organisation. In this way, it can be said that revenue serves spiritual nourishment to the people around, for every submission is an act of faith and every tiny drip a gift fulfilling a spiritual need.

Another major contribution of SHGs is to the wider economic development of the overall community. Once women form their own business groups, they are able to expand their small businesses or open up even more employment opportunities for females elsewhere in local economies. At least women who were once in the informal sector or practising subsistence farming also saw some increase in income as a result of joining an SHG. Research by Kabeer (2005) also found that increased financial independence led to good health outcomes and high levels of educational enrolment among children. SHGs in rural areas are a good place for groups of women to meet and obtain resources or ideas. They also allow for an end to the isolation of farm women in general. SHG is leading women to completely reconsider their self-worth and social status. In SHGs, women learn leadership skills and self-esteem and gain autonomy (Kabeer, 2005). Other advances stemming from these changes are profound. With empowered women come challenges to traditional gender roles and an increase in the likelihood of speaking up against injustice. They are also more likely than unempowered people to make decisions about their own lives that affect not just themselves but their families or entire communities.

Social unity in SHGs brings about not only material benefits but also spirit enhancement for all involved (Moyle et al., 2006). Health education is one of the many activities in which women's groups participate. Awareness campaigns such as not letting their daughters' weddings happen too early, giving in marriage before they come of age, excluding girls from a full education or treating your wife just like a slave have met with widespread acclaim on South Asian TV, radio and in newspapers. Groups do not want to be tied down by the system. In this way, SHGs can help women find out what their rights are and then have enough self-confidence not just to themselves but to a large extent leave an abusive marriage without issue.

Thus, SHGs have been credited with substantially improving women's access to health care and reducing the number of incidents of domestic violence against women, through which both sides can join forces to work on these problems in a supportive atmosphere (Kim et al., 2007). Another important function of the SHGs is political empowerment for women. Participation in these groups not only helps to change women's circumstances economically and socially, but can also raise their capacity for engagement in politics (Agarwala and Mathur, 2019). Women in SHGs are generally more likely to vote, they are more likely to take part in local elections as candidates and much more likely than those who aren't members of an SHG or other sorts of organisations to become involved in all sorts of decision-making processes at the community level (Agarwala and Mathur, 2019). By organising together, women can present their own demands and input into policy at civil society forums when in public policy discussions in rural areas where female registration on the voter rolls has been historically low (Sengupta and Aubriot, 2008). The result of doing this is that SHGs have raised women's political consciousness above all in recognising their rights and the ways of local governance (Sengupta and Aubriot, 2008). This heightened political involvement can translate into more representative policymaking at the community level and greater female inclusion on political bodies.

Self-help groups have also brought personal empowerment. For many women in SHGs, the shift has come through a change in outlook: They are no longer passive objects of men's desires but active subjects capable of making things happen for themselves. Self-possessed and self-confident, their decision-making is now more considered and less reflective of simply responding to what others would expect from them or want them to do "for their own good." Women in SHGs have argued that the autonomy that comes with economic independence gives them greater control over their own lives. They are increasingly involved in decision-making of household activities, whether it is to do with the purchase of a house or their children's education -- a vital aspect for rural

women who may be unable even to own part of the property on which they live. As women gain greater personal autonomy, they also start to challenge and question traditional gender norms that limit their freedom. This cultural shift is one of the most profound outcomes of SHGs (Agarwal and Mathur, 2012), as it is a precondition to any further advance towards gender equality. Nevertheless, here too, there remain obstacles that need to be overcome. For example, in some cases, SHGs encounter problems with sustainability. Though starting with external funding, after a time, this runs out, and then they find no more resources to provide for membership payments—that is when the group disintegrates. There is also the need to ensure that SHGs remain inclusive, as opposed to inadvertently excluding women from marginalised communities or those without land and property rights. Moreover, on certain occasions, SHGs have been criticised for strengthening traditional power divisions, with powerful women of the group often dominating its activities (Agarwal and Mathur, 2012). Based on the above discussion, the following research questions have been framed to study this research.

- RQ1: What are the impacts of the participation of women in SHGs on their economic empowerment?
- RQ2: What are the impacts of the participation of women in SHGs on their social empowerment?
- RQ3: What are the impacts of the participation of women in SHGs on their psychological empowerment?
- RQ4: What are the impacts of the participation of women in SHGs on their overall empowerment through the mediating role of economic, social and psychological empowerment?

## 2. LITERATURE REVIREW, MATERIALS AND METHODS

### 2.1. Literature Review

#### *2.1.1. Women's empowerment*

In the 1980s and 1990s, the concept of women's empowerment emerged as a radical strategy aimed at altering power dynamics to support women's rights and increased equality between men and women (Batliwala, 2007; Batliwala, 1993). The idea of women's empowerment has changed over time and been approached in many ways by scholars, institutions, and governments. The Government of India's Country Report (2009) defined empowerment as "going from a position of enforced powerlessness to one of power," which is a commonly recognised definition and that's why government and non-governmental organisations are working to assist women in achieving their objectives By resolving power imbalances and creating more options because Women's choices, opportunities, and actions are influenced by the power they possess in society (Agarwal and Mathur, 2019; Cheek and Corbett, 2024; Kabeer, 1999; Nayak and Panigrahi, 2020). According to Aggarwal et al. (2020), empowering women entails assisting them in their political, economic, and educational endeavours so they may develop their abilities, competencies, and skills. A broad definition of empowerment encompasses social, cultural, political, and economic aspects. Since there have been several ideas on women's empowerment throughout the years, the subject is hotly contested and takes a multifaceted approach (Ali and Hatta, 2012; Kabeer, 1999; Kabeer, 2001; Kishor and Gupta, 2004).

#### *2.1.2. Dimensions of women's empowerment*

Empowerment is difficult to measure, according to several researchers. Firstly, an identification of a social transition is required, which is specific to the context (Kabeer, 1999; Kabeer, 2001); secondly, many aspects of it are not directly measurable (Mahmud et al., 2012; Saravanan and Dash, 2017); and finally, it has so many dimensions (Ali and Hatta, 2012; Kabeer, 1999; Kabeer, 2001; Kishor and Gupta, 2004). Hence, some scholars created different methods for assessing and measuring women's empowerment.

According to (Baig et al., 2018), women's empowerment is measured by four indicators: Self-esteem, the power of decision making, control over resources and freedom of mobility. Pratley and Sandberg (2018) used economic, social and psychological dimensions to measure women's empowerment. This study has elaborated these three dimensions further.

#### *2.1.3. Economic empowerment*

Economic empowerment is an important parameter in overall empowerment. Enhanced income, self-employment, and thrift creation are examples of economic empowerment that may lead to women's improved position and role in the home, enhanced self-confidence, and the capacity to influence or make decisions (Sarania, 2015).

Women who have access to credit programs and credit cooperatives have more economic empowerment, which improves their overall well-being, according to a thorough case study (Mayoux, 2006) of specific nations in Asia, Africa, and Latin America. An ethnographic study (Hashemi et al., 1996) of six rural Bangladeshi villages further revealed the benefits of women's involvement in self-help groups (such as credit groups), which result in greater economic security, empowerment through economic mobility, and the capacity to make both small and large purchases.

#### *2.1.4. Social empowerment*

Women play an important role in the development of a society when we truly empower them across various social aspects. Social empowerment is a multifaceted program that can lead to social transformation in the desired direction by developing and strengthening people's social attributes, such as cooperation, social interaction, social integrity, and social values (Page and Czuba, 1999).

The enabling factor that fortifies women's social ties and their place in social institutions is known as social empowerment. Social discrimination in society on the basis of gender, race, ethnicity, religion, or disability is addressed by social empowerment (Mandal, 2013).

Improving social empowerment is an essential responsibility that both governments and non-governmental organisations (NGOs) share. These organisations are in charge of giving community-based organisations (CBOs) and educational initiatives both financial support and technical advice. Additionally, they are able to create plans and initiatives that promote social inclusion and remove enduring obstacles to empowerment. One significant

force in the advancement of social empowerment is self-help organisations (Ogbari et al., 2024).

#### *2.1.5. Psychological empowerment*

Psychological empowerment is considered as a multidimensional construct reflecting different aspects of psychological enablement, which is thought of as a constructive integration of individual views of control, a proactive outlook on life, and a critical comprehension of the socio-political landscape, all of which are firmly anchored in a social action framework that encompasses capacity building and community transformation (Bariya et al., 2023). Seligman (2002) a study says that psychological empowerment is highly related to the happiness of an individual, which is difficult to define scientifically, and if we are aiming to understand it then we have to break it down into at least three parts: A pleasant, engaging and meaningful life.

Hansen (2015) a study found that the psychological empowerment of women increases by taking part in a microfinance program, as they start believing in personal control and social network size. According to (Kim et al., 2007), microfinance can help women challenge gender conventions and boost their financial and self-confidence.

The psychological empowerment of SHG women was found to be higher than that of non-SHG members. It was brought about by heightened public knowledge of women's rights, mass media exposure, social involvement, and extended participation (Bariya et al., 2023).

#### *2.1.6. Women's participation in self-help groups*

According to a study conducted in Kenya (Bradley, 1995) using data from the Kenyan Demographic and Health Survey, women who participate in self-help groups—such as credit groups—are less likely to experience domestic violence and are more likely to use family planning than women who do not. Another study evaluated that Women who participate in self-help groups are able to escape poverty and are more likely to participate in community development activities, according to research on the function of women's self-help groups (such as microcredit groups) in South India (Tesoriero, 2006). Similarly, another study conducted in two Northwest Indian villages (Moyle et al., 2006) has shown that Women's self-help group membership is positively connected with collective efficacy, proactive attitudes, self-efficacy, self-esteem, and positive assessments of economic independence and self-worth.

International researches have also found that participation in self-help groups empowers women (Meenai, 2003). In a remote hill area of Nepal, research (Acharya et al., 2007) found that rural illiterate women benefit from joining credit clubs by being able to engage in small-scale economic activity. According to the findings of an exploratory study (Biggs et al., 2004) that used 12 case studies of micro-level groups in Nepal, gender inclusion and empowerment are positively correlated with group attachment.

After reviewing many literatures, gaps are found. This paper fills one of those that highlights the impact of participation in SHGs on women's economic, psychological, social and overall empowerment. An empirical study has been conducted to fulfil the objective through the PLS-SEM model. The structure of the remaining portion is as follows: Literature review section explains the previous studies done on this topic. The theoretical framework and hypothesis section discuss the base theories and hypothesis formulation on the basis of the selected variables for this study. Data and methodology section elaborates the data collection process, which is an online structured questionnaire, and the answers of 400 respondents are being studied. SmartPLS software has been used for the study. The data analysis section shows the results of hypothesis testing, and the conclusion section concludes the findings and interpretation.

### 2.2. Theoretical Framework and Hypothesis Formation

Measurement of women's empowerment is very challenging, as it is a complex multidimensional concept that can be measured in many different ways (Agarwala and Lynch, 2006; Kabeer, 1999; Miedema et al., 2018; Pratley and Sandberg, 2018; Santoso et al., 2019). Much of the literature studying women's empowerment has used proxy measures, like mobility, decision-making power over allocation of household resources, participation in political processes, strength of social networks, and so on (Kumar et al., 2019).

In this study, three basic theories, which are Empowerment Theory, Capability Theory and Social Capital Theory, have been studied. Based on these theories, three variables have been opted for, namely, economic empowerment, social empowerment and psychological empowerment through the level of participation in SHG that ultimately leads to empowerment of SHG members, who in this case are women.

Because of its multidimensional and context-specific nature, measuring and conceptualising women's empowerment remains a challenge (Kabeer, 1999; Agarwala and Lynch, 2006). Women's empowerment itself is not only an outcome but a process as well, whereby women gain resources, develop connections, and realise improved well-being across economic, social, and psychological dimensions. In the specific context of rural India, especially among women who take part in SHGs, collective action, access to financial and social resources, and increased individual and collective capabilities through the support of partner agencies, such as, in the case of Bihar-Jeevika, Kudumbashree in the case of Kerala, MAVIM in Maharashtra and TRIFED in the case of Tribal SHG, constitute the pathway through which empowerment unfolds.

The present study integrates three established theories, namely, Empowerment Theory, Capability Theory, and Social Capital Theory, to draw on an integrated theoretical framework explaining how SHG participation influences women's economic, social, and psychological empowerment for their overall empowerment. These complement each other and collectively provide a robust foundation to examine empowerment as both an individual and collective process facilitated through SHG participation.

### *2.2.1. Empowerment theory*

Empowerment theory explains how individuals and groups gain control over resources, decision-making and actions that affect their lives. Particularly, in women's development thinking, we should link the concept of empowerment to expanding women's "strategic life-choice capabilities," which were eliminated earlier. This means participation in decision-making, access to resources and greater power. Plural perspectives and empowerment theory are two necessary approaches to social services. In other words, *empowerment seems to be a key theoretical orientation for social work and other forms of social intervention. It is manifested as a process by which people improve their abilities and expand their functions, control over their own lives; indeed, empowerment theory contends that the powerless status of people today is mainly brought about by social antagonism, not just personal flaws. According to empowerment theory, social systems' exclusive policies make individual development difficult, but the Social System itself creates these deficiencies, and nobody can escape them. However, these deficiencies and barriers can be "overcome." Social capacities are seen as dynamic, continuously developing through social interaction.

One of the main tenets of Empowerment theory is that social services recipient that can be seen as capable and resourceful (1) people with potential for improvement to fully develop their capacities. Clients and social work practitioners do not relate to each other as a superior to subordinates but rather as people working together in all phases of life. So writes Solomon (1976), who goes on to argue that the key to empowerment is allowing people to see themselves as agents of change, sharing professional knowledge and skills with them, and recognising that personal powerlessness is a social construction that can be undone. Peer interactions and exposure to training programmes all increase women's confidence and knowledge of how to act on one's own, along with leadership capacity - the bargaining weight within the household. As female self-help groups meet regularly, their members become leaders as groups, acquire decision-making skills, and gain increased bargaining power both at home and in their wider world beyond. With sustained participation in such groups, women have greater confidence, independence and control over economic matters or social activities.

Hence the concept of SHGs as an institutional mechanism also motivates the process of empowerment in women: Women are motivated to take part actively in group savings as well as credit utilization, income-generating work and making collective decisions. For SHG activity, the broader participation of women in its activities means substantially more economic, social and psychological empowerment leading to overall development.

Hence, from this theory, the following hypotheses have been framed for this study

$H_1$: Participation in SHG activities positively influences the women's economic empowerment to a great extent

$H_2$: Participation in SHG activities has a positive and significant impact on social women's empowerment

$H_3$: The participation in SHG activities has a positive and significant effect on the psychological empowerment of women.

### *2.2.2. Capability theory*

The capability theory, advanced by Sen (1999), centres on people's substantive freedoms, their capabilities to lead lives they have reason to value. In contrast to income-based approaches, this theory underlines the expansion of human capabilities like education, health, autonomy, and the ability to make decisions. According to this perspective, people are said to be empowered when they gain the capability to convert available resources into valued functioning.

In the context of SHGs, women's participation builds their capabilities in accessing financial resources, skill development programs, social exposure, and institutional support. Membership of SHG will empower women to gain income, financial literacy, and managerial and entrepreneurial skill development capabilities. These developed capabilities will consolidate women's economic freedom, self-esteem, and their levels of meaningful participation in household and community decisions.

Capability theory applies particularly to rural women because SHGs act as platforms that reduce structural constraints and expand women's choices. Improved economic capabilities often translate into improved social standing and psychological well-being, which in turn reinforce the multidimensional nature of empowerment.

Applying capability theory, the study assumes that improvements in the economic, social, and psychological agencies make critical contributions to the general empowerment of women.

Therefore, the following hypotheses have been articulated in context to capability theory:

$H_4$: Economic empowerment exerts a significant positive influence on overall women empowerment

$H_5$: Social empowerment has a significant and positive effect on holistic women's empowerment.

$H_6$: The psychological empowerment significantly and positively influences the overall women empowerment.

### *2.2.3. Social capital theory*

Bourdieu (1986), one among others who propounded the social capital theory that underscores the importance of social networks, trust, norms, and reciprocity, facilitated coordinated action and enhanced individual and collective outcomes. Social capital is relevant in community-based organisations such as SHGs, where collective participation fosters mutual trust, information sharing, and cooperation.

SHGs become significant sources of social capital in the lives of rural women by reinforcing social ties, building trust among their members, and facilitating information and institutional linkages. This network allows them to mobilise resources, meet the expectation of social recognition, and enables them to avoid social isolation as well. Mayoux (2001) in addition, increased social capital has also assisted in raising women's confidence and collective voice in community affairs, along with merely fostering entrepreneurial and economic activities.

SHG participation, as an accumulation of social capital, therefore reinforces women's empowerment directly and indirectly through increasing economic and psychological outcomes. The social capital theory supports the argument that such community participation and individual interaction contribute to overall women's empowerment beyond individual empowerment dimensions (Hu et al., 2024).

The following hypothesis is thus considered:

$H_7$: The participation in SHG activities has a positive and significant effect on overall women's empowerment.

Hence, the theoretical framework of the study has been elaborated in the following figure after taking into consideration all three theories:

## 2.3. Questionnaire Formation

For studying this work, the measurement items for different constructs taken here, namely, level of participation, Economic empowerment, social empowerment, psychological empowerment and overall empowerment, have been taken from different studies and have been modified accordingly.

- For studying the construct "Level of Participation", four indicators, namely, "Length of participation in SHGs proceedings", "Participation in the decision making (loan allotment) etc.", "Participation in Training provided by SHG", "Collective effort to encourage others to take part in a SHG" have been taken and modified from the studies of Nayak and Panigrahi (2020); Khan et al. (2023); Gupta and Rathore (2020); Shambharkar et al. (2012).
- For studying the construct "Economic Empowerment", five indicators, namely,
  "Due to SHGs membership I feel empowered …..(Please rate the following statement) 'repayment capacity of loan", "Initiating income-generating activity", "Improved habit of savings", "Asset Holdings", have been taken and modified from the studies of Ghosh et al. (2023); Nayak and Panigrahi (2020); Khan et al. (2023); Shambharkar et al. (2012); Paray 2023.
- For studying the construct "Social Empowerment", five indicators, namely, "Due to SHGs membership I feel empowered …..(Please rate the following statement)", "Improvement in the level of Education", "Enhancing the level of health awareness", "Improvement in capacity building", "Gaining decision-making power at home" have been taken and modified from Agarwal (2017).
- For studying the construct "Psychological Empowerment", five indicators, namely, "Due to SHGs membership I feel empowered …..(Please rate the following statement)", "Decision making power for self", "Ability to speak for yourself/Enhanced Self-Confidence", "A feeling that I can make a difference", "Confidence to move around independently", have been taken and modified from the studies of Geetha and Dhanasekaran (2021), Nayak and Panigrahi (2020); Brody et al. (2016); Shambharkar et al. (2012); Khan et al. (2023); Rai and Srivastava (2021).
- For studying the construct "Overall Women Empowerment", four indicators namely, "I believe that if all community women participate in SHGs there would be high chance of learning", "With proper training, as of today, all women SHGs member can manage all kind of responsibilities in the village", "I have the power to make financial decisions in my home and community", "I can learn technical skills relating to SHGs economic activities if somebody can teach me", has been taken and modified from the study of (Abdalla et al., 2023)

To fulfil the objective of the current study, we surveyed the SHG women members. The structured questionnaire consisted of three sub-components. The study's purpose was explicitly communicated to respondents before completing the questionnaire. Every item was scored on the 7-point Likert scale. The initial section of the questionnaire was to gather respondents' demographic data, degree of interest and awareness about the SHG program and functions. Part II of the questionnaire focused on inquiries regarding member participation in SHG activities. The third segment examined the women's empowerment transition and specific factors before and after SHG participation.

The questionnaire's reliability and validity were verified before data collection. Pre-tests assessed questionnaire and item clarity. The research's measures were validated via a pilot study. Three experts in SHG and women's empowerment were asked to evaluate the scales' applicability, understandability, and complexity for face and content validity. All viewpoints were included after thorough conversation and comprehension. After considering the ideas, a 50-sample pre-test was conducted among SHG members. After collecting input, the questionnaire was revised to address complexity and obscurity.

The reliability and validity tests confirmed the applicability of the revised scales. Researchers used PLS-SEM to analyse data from the pilot test (n = 75). Internal consistency of the constructs was assessed using Cronbach's alpha. All constructions exceeded 0.700 (Nunnally, 1978). To ensure convergence, factor loadings and AVE were determined. All factor loadings and AVE values exceeded 0.700 and 0.500, respectively. Convergent validity was achieved (Fornell and Larcker, 1981). The square roots of AVEs for all constructs exceeded inter-construct correlations, proving discriminant validity (Fornell and Larcker, 1981). Data collection began after the pilot test yielded satisfactory findings.

## 2.4. Data Collection

We selected Patna and Muzaffarpur district for the present study. Basically, we want to study groups, at least having exposure of 10 years of practising in the nuances of SHG strategies, and only then can it be clear to discern the impact of such strategies, if any, on the increment of social capital and socio- politico-economic empowerment of women by the intervention. It is also worth mentioning that JEEViKA is inducing SHGs membership restricted to rural women only. Besides this, sex ratio-wise, Muzaffarpur district has shown a trend of alarmingly adverse ratio, and within 10 years, it has gone down from the ranking of 15$^{th}$ to 31$^{st}$ among the 38 districts of Bihar. In 2001, the sex ratio in the district was 920, whereas in the census of 2011, it went down to 898. Patna is the capital town and most populous district of Bihar State in India, and the 15$^{th}$ most populous district in

India. This district has an adverse sex ratio of 897/1000 (Female: Male) and a population density of 1823 persons/km$^2$. The two districts represent two different geographical locations of the State. Muzaffarpur District comes under the northern part of the State, whereas Patna is located in the central and southern part of the State.

The study is based on the answers of 400 respondents (members of SHG) of 8 blocks of two districts, 4 blocks from each district of Patna, namely Danapur, Phulwari Sharif, Masaurhi and Belchi and from Muzaffarpur, the 4 blocks were Musahri, Minapur, Bochaha and Kurhani. The blocks were selected completely on the basis of convenience sampling. The responses were collected through structured questionnaires. Respondents were selected using the Random Probability Technique. Unstructured interviews of the SHG members, Federation members and Office bearers, JEEViKA personnel, local level officers and other stakeholders were taken to supplement, corroborate and clarify the essence of the questionnaire. After scrutiny, we found that only 319 responses were complete on all aspects.

The respondents were socially and economically diverse.

### 2.5. Data Analysis

In the current study, being an exploratory investigation, we employed PLS structural equation modelling (Fornell and Bookstein, 1982; Hair et al., 2011).

Smart PLS was used to analyse the data (Ringle et al., 2015). The bootstrapped-resampling procedure has been used to determine the statistical significance of the hypothesis and the predictive relevance and stability of the model. This approach used bootstrapping 5,000 randomly selected sub-samples to replace the initial master data.

The PLS model evaluation comprises two steps, namely measurement model estimation and structural model estimation (Anderson and Gerbing, 1988). The measurement model involves (1) estimating instrument accuracy without random errors and (2) evaluating convergent and discriminant validity. Three approaches were used to verify convergent validity: Cronbach's alpha coefficient (Cronbach, 1951), composite reliability (Nunnally and Bernstein, 1994), and AVE (Fornell and Larcker, 1981). To ensure convergent validity, Cronbach's alpha coefficient and composite reliability values must exceed 0.7, and AVE values must exceed 0.5. Discriminant validity was tested in three ways: Cross-loadings (Hair et al., 2014), Fornell-Larcker criteria (Fornell and Larcker, 1981), and hetero trait-mono trait (HTMT) ratio of correlations (Henseler et al., 2015) was used to assess the relationship between dimensions.

## 3. RESULTS AND DISCUSSION

The data collected from 216 respondents have been arranged systematically, and a demographic profile of the respondents has been presented in Table 1:

Demographic profile of the respondents (include updated demographic profile of SHGs women).

**Table 1: Demographic profile**

| Demographics | Categories | Frequency | Percentage (n=196) |
|---|---|---|---|
| Age (years) | 15-24 | 91 | 46.42 |
| | 25-34 | 35 | 17.85 |
| | 35-44 | 39 | 19.89 |
| | 45-54 | 16 | 8.00 |
| | 55 years or older | 15 | 7.84 |
| Religion | Hindu | 151 | 77.04 |
| | Muslim | 45 | 22.96 |
| Birth gender | Male | 102 | 52.04 |
| | Female | 88 | 44.90 |
| | Intersex | 06 | 3.06 |
| Gender role that describes you | Female to Male | 85 | 43.36 |
| | Male to Female | 89 | 45.40 |
| | Genderqueer | 10 | 5.10 |
| | Binary | 7 | 3.50 |
| | Intersex | 5 | 2.64 |
| | Gender Non-conformity | 0 | 0 |
| Income | 0-25000 | 189 | 96.42 |
| | 25000-50000 | 07 | 3.58 |
| | 50000-75000 | 0 | 0 |
| | 75000 and above | 0 | 0 |

### 3.1. Measurement Model Evaluation

We adopt the methodological framework outlined by Hair et al. (2021) to assess the measurement model. Table 2 displays the Measurement Model Estimation. All items used in the study have achieved outer loadings substantially above the standard value of 0.700, confirming indicator reliability.

In Table 2, the results of partial least squares structural equation modelling (PLS-SEM) for the measurement model are presented. The measurement model was evaluated in terms of indicator reliability, convergent validity, construct reliability, and discriminant validity according to established PLS-SEM guidelines.

The outer loading values are used to evaluate indicator reliability. A recommended threshold has been set at 0.70 or higher.

For all indicators across all the constructs have outer loadings higher than 0.70. This shows that every item strongly reflects its corresponding latent construct. Hence, Benchmark efficacy is to some extent demonstrated here.

### 3.2. Convergent Validity

Convergent validity was assessed based on AVE (average variance extracted). An AVE score in excess of 0.50 means that a construct explains that portion of its indicators 'more than half.

The AVE values we obtained were:

- Economic empowerment: 0.7523
- Participation: 0.7619
- Social empowerment: 0.6933
- Psychological empowerment: 0.7022
- Overall women empowerment: 0.7689

All AVE values are above the minimum threshold.
Hence, convergent validity is demonstrated for all constructs.

**Table 2: Measurement model estimation**

| Latent variable/ construct | Item code | Indicator reliability | Convergent validity | Construct reliability | | | Discriminant Validity |
|---|---|---|---|---|---|---|---|
| | | Outer loading score >0.70 | AVE >0.500 | Cronbach's alpha (α) | Dijkstra-Henseler's rho (ρA) | Jöreskog's rho (ρc) | HTMT Confidence interval does not include 1 |
| Economic empowerment | Eco_Emp_1 | 0.8372 | 0.7523 | 0.8901 | 0.8910 | 0.9239 | Yes |
| | Eco_Emp_2 | 0.8687 | | | | | |
| | Eco_Emp_3 | 0.8754 | | | | | |
| | Eco_Emp_4 | 0.8872 | | | | | |
| Participation | Parti_1 | 0.8552 | 0.7619 | 0.8957 | 0.8972 | 0.9275 | Yes |
| | Parti_2 | 0.8810 | | | | | |
| | Parti_3 | 0.9045 | | | | | |
| | Parti_4 | 0.8498 | | | | | |
| Social empowerment | Social_Emp_1 | 0.8679 | 0.6933 | 0.8512 | 0.8604 | 0.9001 | Yes |
| | Social_Emp_2 | 0.7705 | | | | | |
| | Social_Emp_3 | 0.8975 | | | | | |
| | Social_Emp_4 | 0.7878 | | | | | |
| Psychological empowerment | Ind_Emp_1 | 0.7413 | 0.7022 | 0.8573 | 0.8681 | 0.9037 | Yes |
| | Ind_Emp_2 | 0.8953 | | | | | |
| | Ind_Emp_3 | 0.8623 | | | | | |
| | Ind_Emp_4 | 0.8451 | | | | | |
| Overall women empowerment | OWP_1 | 0.8790 | 0.7689 | 0.8984 | 0.9059 | 0.9298 | Yes |
| | OWP_2 | 0.9105 | | | | | |
| | OWP_3 | 0.9274 | | | | | |
| | OWP_4 | 0.7834 | | | | | |

## 3.3. Construct Reliability

Construct reliability was assessed using three measures:

Cronbach's alpha (α), Dijkstra–Henseler's rho (ρA) and composite reliability (ρc) (often used in PLS-SEM).

For all constructs, the figures are:

- Range of Cronbach's alpha values: 0.8512-0.8984
- Range of ρA values: 0.8604-0.9059
- Range of composite reliability values: 0.9001-0.9298.

All values are well above the recommended threshold of 0.70, indicating strong internal consistency.

Hence, the constructs are highly reliable.

## 3.4. Discriminant Validity (HTMT Criterion)

Discriminant validity was assessed using the Heterotrait-monotrait ratio (HTMT). A HTMT confidence interval that doesn't contain 1 indicates discriminant validity, as the PLS-SEM guidelines state.

The confidence intervals for HTMT doesn't contain 1 for every combination of constructs.

Hence, each construct is empirically distinguishable from the others.

Therefore, Table 2 provides evidence that the measurement model meets all benchmark conditions; that the indicators are dependable, the construct display good convergent validity and integrity, and discriminant validity has been substantiated. Consequently, this model can be employed in subsequent structural models.

## 3.5. Structural Model Evaluation

The structural relationships among participation in SHGs, economic empowerment, social empowerment, psychological empowerment, and overall women's empowerment are illustrated in Figure 1.

The figure above illustrates partial last square (PLS-SEM) structural model estimates. It shows how engagement interacts with different dimensions of women empowerment, and that interaction between these different constructs forms the joint impact for concomitant rights overall.

### *3.5.1. Latent constructs and indicators*

Latent variables (constructs) are represented by circles: -Participation -Economic Empowerment -Psychological Empowerment -Social Empowerment -Overall Women's Empowerment. Observed indicators (questionnaire items) used to measure each construct are plotted in rectangles.

### *3.5.2. Path coefficients (β values)*

The numbers attached to the arrows represent the standardized path coefficients which determine the strength and direction of relationships between variables.

a) Participation → Economic Empowerment: Beta = 0.677
b) Participation → Psychological Empowerment: Beta = 0.650
c) Participation → Social Empowerment: Beta = 0.660
d) Economic empowerment → Overall Women Empowerment: Beta = 0.203
e) Psychological empowerment → Overall Women Empowerment: Beta = 0.247
f) Social empowerment → Overall Women Empowerment: Beta = 0.301.

Among these, social empowerment has in fact the compelling sway over overall women power and that is followed by psychological and economic empowerment.

### *3.5.3. Coefficient of determination (R values)*

Each R value inside the circle represents the proportion of variance which is explained in each endogenous construct.

- Economic empowerment: $R^2$ = 0.458. In other words, participation explains 45.8% of the variation
- Psychological empowerment: $R^2$ = 0.422. In other words, the participation accounts for 42.2%ofvariance
- Social empowerment: $R^2$ = 0.436. In other words, contribution explains 43.6% of the variance
- Overall women empowerment: $R^2$ = 0.725. In other words, all Social, Economic and Psychological empowerment explain 72.5% of variance.

According to the PLS-SEM guidelines, these R values show that there is a moderately satisfactory explanation, especially so in the case of overall women's empowerment.

## 3.6. Overall Interpretation

The illustration shows that participation plays a pivotal role in women's economic, mental, and social empowerment. These forms of empowerment, in turn, have a significant impact on overall women's rights and freedom. Social empowerment acts as a driving force for overall empowerment. The model explains a substantial amount of variance, making it highly likely that there will be a change or a new period of development will take place.

The structural model results show that engagement has a statistically significant effect on economic, psychological, and social empowerment. In addition to this, all of the three empowerment dimensions have a healthy positive influence on overall women's rights, with social empowerment exerting the most significant impact. The model demonstrates a high degree of explanatory power. In other words, everything is accounted for now! Thus, explaining 72.5% of the variance in rights for women worldwide suffers from a lack of investigation, analysis, and theorisation that would construct a common balance between the two sides.

## 3.7. Hypothesis Testing

The structural model and hypothesis testing are evaluated following the Hair et al. (2016) framework. Table 3 displays the test statistical findings. The first step consists of assessing the multicollinearity with the VIF value, and all the variables' scores were found to be <5. Next, we present the path coefficient results to understand the statistical significance of the relationship/linkage. All path coefficients are found to be statistically significant, positive and range between 0.2027 and 0.6766.

The association between participation in SHG activities – economic empowerment is found to be most significant as the path coefficient is found to be highest (0.6766). The coefficient

**Figure 1:** Partial least squares structural equation modelling structural model estimates

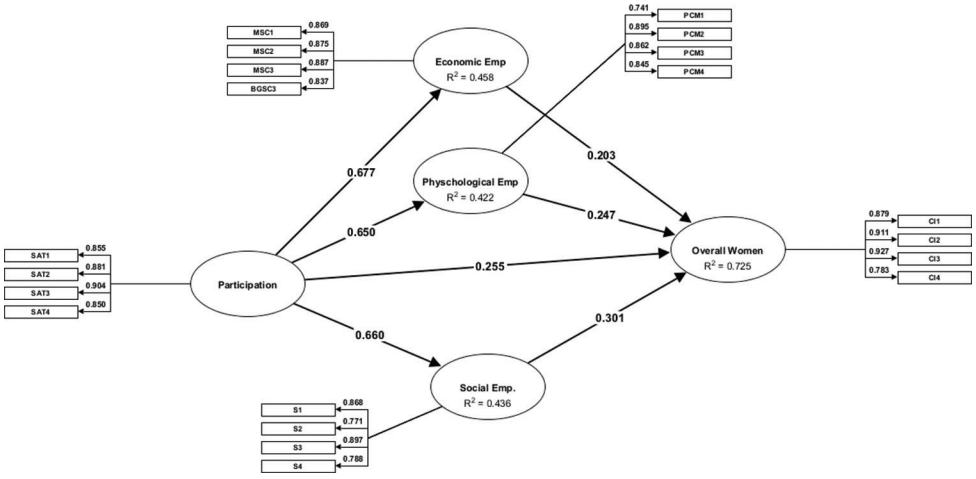


**Table 3: Structural model evaluation and hypothesis testing results**

| Hypotheses | Path | Path coefficient | Inner VIF | R square | Cohen's $f^2$ | T-statistics | P-values | Inference |
|---|---|---|---|---|---|---|---|---|
| $H_1$ | Participation->Economic Emp | 0.6766 | | | 0.8443 | 14.7950 | 0.0000 | Accepted |
| $H_2$ | Participation->Psychological Emp | 0.6497 | | | 0.7303 | 12.1298 | 0.0000 | Accepted |
| $H_3$ | Participation->Social Emp | 0.6603 | | | 0.7729 | 13.6020 | 0.0000 | Accepted |
| $H_4$ | Economic Emp->OWE | 0.2027 | | | 0.0711 | 3.3103 | 0.0010 | Accepted |
| $H_5$ | Psychological Emp->OWE | 0.2475 | | | 0.1173 | 4.3263 | 0.0000 | Accepted |
| $H_6$ | Social Emp->OWE | 0.3013 | | | 0.1681 | 5.3433 | 0.0000 | Accepted |
| $H_7$ | Participation->OWE | 0.2548 | | | 0.0921 | 3.8363 | 0.0001 | Accepted |
| Dependent variables in the model | Economic Emp | | | 0.4553 | | | | |
| | Social Emp. | | | 0.4333 | | | | |
| | Psychological Emp | | | 0.4194 | | | | |
| | Overall Women Empowerment | | | 0.7200 | | | | |
| SRMR | | | | | | | | |

of determination ($R^2$ values) was assessed in the following phase to assess the model's explanatory power. The $R^2$ values ranged from 0.4194 for individual empowerment to 0.7200 for overall women empowerment, surpassing the required threshold of 0.1. Understanding the impact of the exogenous variable on the endogenous construct is beneficial.

Effect sizes more than 0.02, 0.15, and 0.35 indicate weak, moderate, and strong impacts, respectively. The study shows that participation significantly influences economic empowerment (0.8443) and followed by social empowerment (0.7729), psychological empowerment (0.7303) and overall women's empowerment (0.0921).

The fitness of the model was assessed using the SRMR value of 0.067, which was below the specified threshold of 0.08. Hypothesis testing is conducted based on 5,000 bootstrapping sample under PLS–SEM algorithm.

All seven hypotheses were accepted (Figure 2). Individual participation in SHGs activities ($H_1$) has a positive and significant impact on the economic empowerment of the women ($\beta = 0.6766$, $P < 0.01$); $H_1$ is accepted. Similarly, Individual participation in SHGs activities also has a positive and significant impact on social empowerment ($\beta = 0.7729$, $P < 0.01$), individual empowerment ($\beta = 0.7303$, $P < 0.01$), and overall women's empowerment ($\beta = 0.0921$, $P < 0.01$). Thus, $H_2$, $H_3$ and $H_4$ are accepted.

As hypothesized economic empowerment ($H_5$ having $\beta = 0.20278$, $P < 0.001$), individual empowerment ($H_6$ having $\beta = 0.1173$, $P < 0.01$), and social empowerment ($H_7$ having $\beta = 0.3013$, $P < 0.01$) have a significant impact on women's empowerment. Hence, hypotheses $H_5$, $H_6$, and $H_7$ are supported.

Table 3 presents the results of the widely used metrics for internal consistency, namely Cronbach's alpha, rho_A, composite reliability, and AVE. We found that the AVE statistic exceeds the specified threshold of 0.500, and the remaining three statistics are well above the specified threshold of 0.700. HTMT ratio scores, used to assess discriminant validity, are significantly below one. Thus, the data analysis confirms the presence of discriminant validity. Based on the above results, we proceeded to the subsequent assessment phase: Structural model evaluation.

**Figure 2:** Theoretical framework

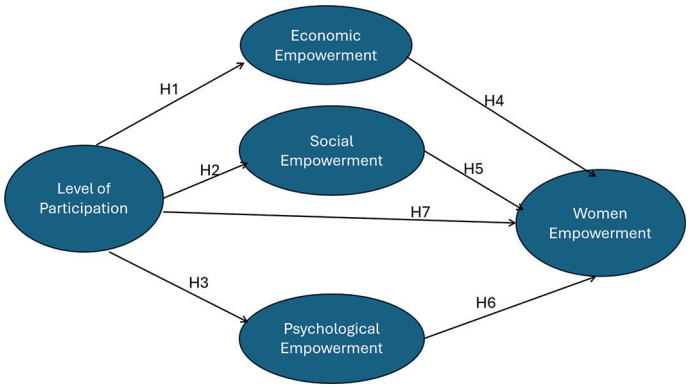


Table 3 presents the results of the structural model evaluation and highlights the key relationships among participation, the three empowerment dimensions, and overall women's empowerment. The findings provide strong empirical support for the proposed model. All seven hypotheses are accepted because paths are positive and statistically significant. Participation of women in SHGs shows a substantial positive effect on economic empowerment ($\beta = 0.6766$), psychological empowerment ($\beta = 0.6497$), and social empowerment ($\beta = 0.6603$). These high path coefficients, very large t-statistics and P-values below 0.001 indicate that improved participation of women in SHGs significantly improves women's economic independence, social standing and psychological confidence. Among these relationships, participation has its strongest effect on economic empowerment, suggesting that active involvement plays a critical role in improving the economic condition of women. The results further show that all three empowerment dimensions significantly contribute to overall women empowerment (OWE). Social empowerment emerges as the most influential predictor of OWE ($\beta = 0.3013$), followed by psychological empowerment ($\beta = 0.2475$) and economic empowerment ($\beta = 0.2027$). This pattern indicates that improvements in women's social relationships, social recognition, and community involvement have the greatest impact on their overall empowerment, while psychological and economic aspects also play important but comparatively smaller roles. The Cohen's $f^2$ values support this explanation. Social empowerment showed a moderate effect size, and the other two dimensions showed small to moderate effects.

Participation not only influences empowerment indirectly through economic, psychological, and social pathways but also exerts a direct effect of participation on women's overall empowerment ($\beta = 0.2548$). This suggests the key role of participation as both an independent and foundational driver of empowerment.

In terms of explanatory power, the model demonstrates strong performance. Participation explains a substantial proportion of variance in economic ($R^2 = 0.4553$), social ($R^2 = 0.4333$), and psychological empowerment ($R^2 = 0.4194$). Most importantly, the combined effects of participation and the empowerment dimensions explain 72% of the variance in overall women's empowerment, indicating high predictive accuracy. Finally, the SRMR value of 0.075 confirms a good overall model fit. Overall, the findings emphasise participation as a key mechanism through which multiple dimensions of empowerment are strengthened, ultimately leading to higher overall women's empowerment.

## 4. CONCLUSION AND POLICY IMPLICATIONS

When more women became SHGs members, it not only offered many marginalized people a new way to financially get on its feet, but also changed their social status for the good of everyone in

general. Confidence in their own financial situation gives women the ability to invest in small businesses, agriculture or domestic living expenses. Diversification of sources helps increase and diversify income for the family as a whole. In Bihar, it turned out that living standards did not decline, but rather went up after joining an SHG. Estimates show measurable advances in gender equality within those communities where research is possible may be set to stand. After they come into contact with the money lending institutions and private credit operators that cater predominantly for male customers, women possess a degree of financial self-determination. They can determine the direction their family takes, mainly in terms of economic policy, by virtue of contributing money and using that power as leverage when necessary.

The study suggests that the SHG not only brings economic welfare, but it has also resulted in widespread social and psychological changes for women in rural Bihar. Membership of SHGs promotes a sense of belonging among women, which gives confidence and the capability to participate in social actions. Women join in community life more actively, and they take part in decision-making processes even at the lowest level of government and community. Research shows that SHG membership has a positive psychological effect, which enhances self-confidence and self-sufficiency among women. A mental shift in ideology makes women move around feminist cultures more easily than women without such a shift. Participation in SHGs can begin breaking down age-old norms through her mobility and confine her natural voice. In addition, SHGs also function as a medium for health education and improvement in well-being. Findings from studies in Bihar show that compared to non-SHG members, women who are members of SHGs have a higher understanding of antenatal care practices, appropriate hygiene behaviours and other nutritional knowledge due to participating in SHG meetings and group discussions. In addition, SHGs lead to changes in attitudes towards health and overall well-being. Consequently, women who belong to SHGs extend their social networks. They help each other during times of crisis and become more visible in public spaces. This way of gaining collective effort often leads to individual economic advantages, giving women a sense that they share a purpose with others. Women's empowerment through SHGs is still a process in transition. Coordinated government action, sustained training and coordination with wider development systems all need to mesh to achieve results. In conclusion, the ability of women in Bihar to participate in SHGs is a comprehensive pathway to liberation. By allowing women to save, borrow, lead and represent themselves and their families, SHGs not only enhance individual ability but also gradually help develop sustainable communities. Training, education, decision making, critical thinking, skill development, participation in collective action, and networking, providing access to resources and integration, empowerment, capabilities and social capital will be essential for consolidating success and moving gender equity and rural prosperity forward in Bihar

In Bihar, women who participate in self-help groups (SHGs) as part of the JEEViKA rural livelihood programs have access to financial services and markets that were previously inaccessible. By earning money, accessing formal financial services, and getting linked with banks and State government programs, SHGs have brought rural women into the economic mainstream. JEEViKA model mobilised millions of women in organised groups through building significant savings, access to bank credit and resilience against shocks that really build prosperity in a household or community. The policy implications of the model go beyond the mere inclusion of the poor in the financial and economic system. They underline the necessity for structural support, capacity building and equitable design. Rural women do not engage in an SHG because of motivation by organisers or awareness about the benefits of SHGs. Research into the participation of women in SHGs in Bihar points out this fact. Policymakers therefore need to put in place measures to promote the spread of service, involve communities and keep up an ongoing campaign so as reach those most marginalised women who would otherwise remain outside that system entirely. Hence, state policies may do well to keep to their elaborated framework for implementation. This includes training local mobilisers who work with villages involving local government cadres, organisations and the like on one hand and utilises SHGs within broader socioeconomic schemes on the other. It makes sure that the increase in women's representation really means a substantial gain in power rather than just an overlay representative role. Another important policy issue is to exploit SHGs for health, education and social welfare systems. Investigations in Bihar have shown that the SHG platform can play a very effective role in providing health information, improving maternal health practices, and promoting sanitation and nutrition knowledge at the household level. This highlights the potential of SHGs for delivering public programmes. Such practice may therefore mean that health and social welfare departments in states can work with SHG networks in order to achieve greater coverage and effectiveness-- particularly in poor rural areas. It also enables services to be provided on a stepped-up basis without duplicating administrative effort. The implications of policy and administration cannot be ignored either. Policies that encourage women to join SHGs can also reinforce grassroots democracy and contribute to leadership development. Indeed, such an approach will, in addition, throw up talented cadres of women leaders for local Panchayati Raj Institutions, thereby increasing their participation in community decision-making. As SHG members gain in resourcefulness and influence, there is more scope for policy chargebacks where women articulate community needs and priorities, which leads to more responsive governing. This relationship between economic participation and citizenship is an excellent example of how SHGs can contribute to open governance. Women, after all, are rising above their traditional domestic roles to become part of public life. But SHGs do have their achievements, and also questions of policy refinement.

Research has identified difficulties, such as whether there is a misunderstanding about the SHG mechanism and its benefits, and for women, a lack of relevant entrepreneurship skills. To tackle this problem, we must have skill training targeted at the needs of specific industries, vocational education, as well as help with marketing ties to ensure that women of SHGs can turn borrowing into businesses that can sustain regular, long-term income. And then there are the systemic barriers blocking

pathways for women, like conservative social norms, mobility restrictions that confine them to certain areas and limited access to education. It is these that continue to place a lid on how fully female participation in SHGs may be achieved. SHG experiences in Bihar also produce implications in terms of financial policy. It is possible to avoid relying on informal moneylenders by setting up a more robust financial ecosystem for SHGs, with policies that help encourage mainstream banks to support them and access credit at reasonable rates, as well as gender-specific financial products for women. When the money reaches a certain level, then female-run businesses not only survive but they mushroom. Literacy programmes that provide information on handling money, electronic bank account facilities and in cooperatively-organised financial institutions such as Jeevika Cooperative Bank make these economic benefits institutional and give women an environment for long-term development.

In a nutshell, SHGs in Bihar testify that the policy implications of women's participation in such require financial inclusion and integration of health services, governance skills development, and institutional innovation. Through constructing collective platforms that empower women at the grassroots level, the SHG model of development proves successful in not only bettering the livelihood of individuals and improving social identity and interaction patterns, but also updating local economies.

## 5. ACKNOWLEDGMENT

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