Impact of Microfinance on Self-Help Group (SHG) Performance: A Structural Equation Modeling and Regression Analysis Approach

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ARTICLE INFO	ABSTRACT
	Microfinance has been a key driver of financial inclusion and economic empowerment, particularly through Self-Help Groups (SHGs). This study investigates the impact of microfinance on SHG performance in Chennai by integrating Multiple Regression Analysis and Structural Equation Modeling (SEM). The study evaluates key socio-economic dimensions, including credit access, savings mobilization, skill development, cooperation, poverty alleviation, women empowerment, economic growth, and social welfare. A two-stage analytical approach is employed: first, Multiple Regression Analysis assesses the direct effect of microfinance on SHG performance. Next, SEM is used to examine mediating relationships among the identified dimensions. The SEM results reveal that microfinance positively influences SHG performance, with women empowerment and skill development acting as significant mediators. The model fit indices confirm the robustness of the proposed framework. The study provides empirical insights into the role of microfinance in enhancing SHG effectiveness and contributes to policymaking by identifying key intervention areas for financial institutions and development practitioners. **Keywords:** Microfinance, Self-Help Groups, Structural Equation Modeling, Regression Analysis, Women Empowerment, Economic Growth, Financial Inclusion.

INTRODUCTION

Microfinance has emerged as a powerful tool for promoting financial inclusion and socio-economic development, particularly among marginalized communities. One of the most successful mechanisms for delivering microfinance services is through Self-Help Groups (SHGs). SHGs provide a platform for individuals, particularly women, to access financial resources, build skills, and foster social and economic development.

The study focuses on the impact of microfinance on SHG performance in Chennai, using Multiple Regression Analysis and Structural Equation Modelling (SEM). The research evaluates key dimensions such as credit access, savings mobilization, skill development, mutual cooperation, poverty alleviation, women empowerment, economic growth, and social welfare. By integrating empirical analysis, the study aims to provide insights into how microfinance influences SHGs and the role of various socio-economic factors in strengthening SHG performance.

REVIEW OF LITERATURE

Research highlights the significant impact of microfinance on Self-Help Groups (SHGs), particularly in enhancing financial independence and socioeconomic development. Kanniammal, Jerinabi, and Arthi (2011) found that microfinance through SHG-Bank Linkage Programs increases income, savings, employment, and decision-making power while reducing reliance on moneylenders. Sudarshan (2011) emphasized financial empowerment in Andhra Pradesh and Telangana, recommending leadership elections and tailored loan products. Desai (2011) stressed skill training and leadership for entrepreneurial success. Ganapathi and Murugesan (2011) identified education, income, and financial literacy as key economic factors. Henriques and Gaonkar (2011) noted older SHGs tend to use microfinance for non-productive purposes. Janagan (2011) highlighted SHGs' role in empowering rural women socially, legally, and politically. Tripathy and Jain (2011) found internal savings drive economic growth more than

bank credit. Nandhini et al. (2011) emphasized SHGs' role in women's entrepreneurship and gender equality, fostering empowerment and economic growth.

OBJECTIVES

1. To examine the impact of microfinance on the overall performance of SHGs in Chennai.

2. To apply Multiple Regression Analysis and Structural Equation Modelling (SEM) to assess the direct and mediating effects of microfinance on SHGs.

3. To provide policy recommendations for enhancing microfinance services and optimizing SHG outcomes.

RESEARCH METHODOLOGY

The study employs a quantitative research design using Multiple Regression Analysis and Structural Equation Modeling (SEM) to assess microfinance's impact on SHG performance. Primary data was collected from selected Chennai SHGs through structured questionnaires and interviews. A stratified random sampling method ensured representation based on SHG size, age, and financial activity. Multiple Regression Analysis examined direct relationships between microfinance dimensions and SHG performance, while SEM tested mediating effects and model robustness. Model fit was validated using Chi-square/DF, CFI, GFI, RMSEA, and RMR indices, ensuring statistical reliability and accuracy in assessing the impact of microfinance on SHG development.

DATA ANALYSIS

Inter-Test of Association for dimensions of micro finance to SHGs in Chennai city.

H_0: There is a no significant relationship exists between the dimensions of micro finance to SHGs in Chennai city.

Table .1   showing Inter-relationship among the micro finance to SHG in Chennai city

Dimensions of micro finance to SHG	Credit to Poor	Mobilization of Savings	Development of skill	Mutual help and cooperation
Credit to Poor	1	-	-	-
Mobilization of Savings	0.497**	1	-	-
Development of skill	0.289**	0.347**	1	-
Mutual help and cooperation	0.364**	0.401**	0.267**	1

Note: ** denotes Correlation is significant at the 0.01 level (2-tailed).

Table. summarizes the correlation coefficients between the various dimensions of micro finance among the selected SHGs. From the analysis, it is found that the highest most interrelationship that has observed is between mobilization of savings and credit to poor which is shown as 0.497. Likewise, it is observed that 0.401 of relationship is found between mutual help and cooperation and mobilization of savings. Moreover 0.364 of correlation exists between mutual help and cooperation and credit to poor. Also, interrelationship correlation coefficient of 0.289 exist between development of skill and credit to poor and a correlation coefficient of 0.267 exist between mutual help and cooperation and development of skill. All the above said associations are positive and noteworthy at 1% level.

Inter-Test of Association for dimensions of SHG benefits in Chennai city.

H_0: There is a no significant relationship exists between the dimensions of SHGs benefits in Chennai city.

Table .2   Table showing Inter-relationship among the micro finance to SHG in Chennai city

Dimensions of SHG benefits	Poverty alleviation	Women empowerment	Economic growth	Social welfare
Poverty alleviation	1	-	-	-
Women empowerment	0.278**	1	-	-
Economic growth	0.321**	0.277**	1	-
Social welfare	0.254**	0.311**	0.216**	1

Note: ** denotes Correlation is significant at the 0.01 level (2-tailed).

Table. summarizes the correlation coefficients between the various dimensions of SHG benefits among the selected SHGs. From the analysis, it is found that the highest most interrelationship that has observed is between Economic growth and poverty alleviation which is shown as 0.321. Likewise, it is observed that 0.311 of relationship is found between social welfare and women empowerment. Moreover 0.278 of correlation exists between women empowerment and poverty alleviation. Also, interrelationship correlation coefficients of 0.277 exist between economic growth and women empowerment and a correlation coefficient of 0.216 exist between social welfare and economic growth. All the above said associations are positive and noteworthy at 1% level.

MULTIPLE REGRESSION ANALYSIS

Regression analysis is a statistical tool in finding values of a dependent variable on the basis of independent variable. It is used to examine the relationship of a variable Y to a set of other independent variables X_1, X_2, X_3............X_n. the most commonly used linear equation is $Y = b_0 + b_1 X_1 + b_2 X_2 + ... + bnXn + error$.

To study the micro finance model a regression analysis, enter method was used to find the relationship between the dependable variable micro finance and the independent variables Credit to Poor, Mobilization of Savings, Development of skill and Mutual help and cooperation.

Table .3 Table showing Variables in the multiple regression analysis

Predictor variables with micro finance as the DV	R^2/ Adjusted R^2	Standardized coefficient Beta	F - Value	t - value	Sig
Credit to Poor		.754		2.348	.000*
Mobilisation of Savings	0.415 / 0.398	.209	18.864 p=0.000*	3.157	.000*
Development of skill		.364		2.378	.000*
Mutual help and cooperation		.177		3.698	.000*

Note: * Denotes 1% level of significance

It is observed from the table that the regression model's ANOVA F value is 18.864 and it is significant at 1% level. The multiple linear regression equation is obtained as

MF = constant +.754 (Credit to Poor) +.209 (Mobilization of Savings) + .364 (Development of skill) +.177 (Mutual help and cooperation)

The Coefficient of Determination R-square measures the goodness-of-fit of the variation in the dependent variables explained by the fitted sample regression equation. The regression model's coefficient of determination (R^2) is .415 and adjusted R^2 is .398, which is a good coefficient value. That is 39.8% of the variation is explained by the model.

To study the SHG benefits model the dependable variable is the SHG benefits and the independent variables are poverty alleviation, women empowerment, economic growth and social welfare.

Table .4 Table showing Variables in the multiple regression analysis

Predictor variables with SHG benefits as the DV	R^2/ Adjusted R^2	Standardized coefficient Beta	F - Value	t - value	Sig
Poverty alleviation		.845		3.350	.000*
Women empowerment	0.495 / 0.468	.419	15.324 p=0.000*	4.872	.000*
Economic growth		.164		2.629	.000*
Social welfare		.217		3.455	.000*

Note: * Denotes 1% level of significance

It is observed from the table that the regression model's ANOVA F value is 15.324 and it is significant at 1% level. The multiple linear regression equation is obtained as

SHG = constant +.845 (Poverty alleviation) +.419 (Women empowerment) + .164 (Economic growth) +.217 (Social welfare)

The Coefficient of Determination R-square measures the goodness-of-fit of the variation in the dependent variables explained by the fitted sample regression equation. The regression model's coefficient of determination (R^2) is .495 and adjusted R^2 is .468, which is a good coefficient value. That is 46.8% of the variation is explained by the model.

SEM FOR IMPACT OF MICRO FINANCE ON SELF HELP GROUP IN CHENNAI

In order to determine impact of micro finance on Self-help groups in Chennai city, a structural equation modelling is used to confirm the relationship among the dimensions such as credit to poor (CP), mobilization of savings (MS), development of skill (DS), mutual help and cooperation (MHC), poverty alleviation (PA), women empowerment (WE), economic growth (EG) and social welfare (SW).

H_0 : SHG benefits is having no significant relationship with micro finance.

Figure represents the SEM model for the impact of micro finance on SHG in Chennai city
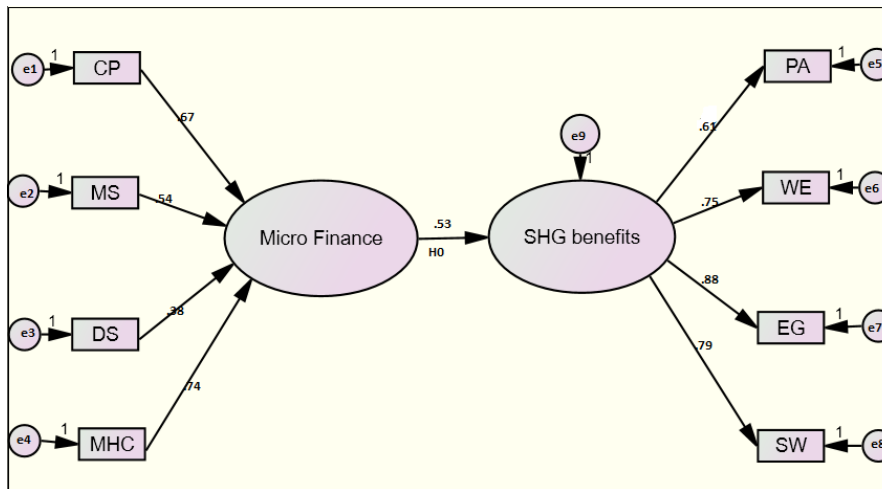

Table .5 showing Regression Weights of SEM Model

Path			Std. Estimate	C.R.	P
SHG benefits	<---	Micro finance	0.751	8.414	<0.001**
CP	<---	Micro finance	0.672	9.254	<0.001**
MS	<---	Micro finance	0.541	37.211	<0.001**
DS	<---	Micro finance	0.379	27.122	<0.001**
MHC	<---	Micro finance	0.742	15.547	<0.001**
PA	<---	SHG benefits	0.634	9.247	<0.001**
WE	<---	SHG benefits	0.753	21.826	<0.001**
EG	<---	SHG benefits	0.884	20.896	<0.001**
SW	<---	SHG benefits	0.791	15.626	<0.001**

Note: ** Symbolizes significant at 1% level

Table indicates the standardized regression weights, and critical ratio of the SEM model. The standardized coefficient for micro finance with regards to SHG benefits is 0.751 which specifies moderate influence on micro finance by having other variables as unaffected. The positive sign of the coefficient shows that SHG benefits of the respondents would rise by 0.751 for every unit rise in micro finance to the SHG in Chennai city and it is significant at 1% level. Similarly, all the coefficients represent the influence of independent variable on dependent variable.

Table .6 Table showing Abstract of Model Fitness indices

S. No	Model Fitness Index	Value
1.	Chi-square / Degrees of Freedom	3.128
2.	Significance Value	0.914
3.	Goodness of Fitness index (GFI)	0.932
4.	Goodness of Fitness index (AGFI)	0.955
5.	Comparative Fit Index (CFI)	0.939
6.	Root Mean Square Residuals (RMR)	0.022
7.	Root Mean Square Error of Approximation (RMSEA)	0.047

Table above shows the summary of model fitness indices values. From the table it is found that all the given model fitness indices are well inside the reference range, i.e. the Chi-square / Degrees of Freedom index is 3.128, which falls in the range of 2 to 5 (Marsh & Hocevar 1985), which shows good fit. Likewise, significance value of the SEM model is 0.914, which is above 0.05 (Wheaton *et al.* 1977) displays absolute fit, whereas GFI Index and AGFI index values are 0.932 (Hair *et al.* 2006) and 0.955 (Daire *et al.* 2008) correspondingly and these values are above than 0.90 which signifies absolute fit. The CFI index is 0.939 which proves that it is a good fit. It is also recognized that RMR and RMSEA values are is 0.022 (Hair *et al.* 2006) and 0.047(Hair *et al.* 2006) correspondingly which is below 0.08 signifies a good fit. It is found that the overall Structural Equation Model integrates dimensions of the micro finance impact on SHG and found to be fit. The results of SEM model shows the association that occurs between the selected constructs and it is ascertained that the micro finance to SHGs in Chennai city is having impact on the selected SHGs.

FINDINGS

It is found that in the regression analysis to find the impact of the independent variables Credit to Poor, Mobilization of Savings, Development of skill and Mutual help and cooperation on the dependent variable micro finance impact, R^2 is .415 and adjusted R^2 is .398, which is a good coefficient value. That is 39.8% of the variation is explained by the model.

It is found that in the regression analysis to find the impact of the independent variables poverty alleviation, women empowerment, economic growth and social welfare on the dependent variable SHG benefits, R^2 is 495 and adjusted R^2 is .468, which is a good coefficient value. That is 46.8% of the variation is explained by the model.

It is found that in the test to determine impact of micro finance on Self help groups in Chennai city, a structural equation modelling is used to confirm the relationship among the dimensions such as credit to poor (CP), mobilisation of savings (MS), development of skill (DS), mutual help and cooperation (MHC), poverty alleviation (PA), women empowerment (WE), economic growth (EG) and social welfare (SW), the results of SEM model shows the association that occurs between the selected constructs and it is ascertained that the micro finance to SHGs in Chennai city is having impact on the selected SHGs.

SUGGESTIONS

To enhance the impact of microfinance on SHGs, several strategic interventions are recommended. Simplifying lending procedures and minimizing bureaucratic barriers can improve credit access for SHGs, particularly benefiting women entrepreneurs. Financial institutions should introduce flexible loan structures with lower interest rates and reduced collateral requirements. Encouraging savings habits through financial literacy programs and incentives can enhance SHG sustainability. Awareness campaigns and reward-based savings programs can further promote financial discipline among members. Government and NGOs should implement targeted skill-building programs to enhance SHG members' employability and entrepreneurial capabilities.

Training in financial management, business planning, and digital literacy can significantly boost income-generating opportunities. Establishing networking platforms and knowledge-sharing forums among SHGs can strengthen collective growth. Encouraging group collaborations and partnerships with financial institutions and industries can enhance resource-sharing and innovation. Tailored policies promoting women's leadership and decision-making within SHGs can amplify their socio-economic impact. Special financial incentives and training programs can further encourage active female participation. Strengthening SHG linkages with markets and industries can improve financial stability. Facilitating market access, integrating technology, and promoting sustainable business models can drive long-term economic growth and community welfare. These measures will ensure that SHGs continue to thrive and contribute to holistic socio-economic development.

CONCLUSION

The study underscores the critical role of microfinance in enhancing SHG performance in Chennai. The findings reveal significant interdependencies between microfinance dimensions and SHG benefits, with economic growth and women empowerment emerging as key mediators. Multiple Regression and SEM results confirm that microfinance positively influences SHG outcomes, fostering socio-economic development.

Policy recommendations emphasize the need for targeted interventions to improve credit access, skill development, and mutual cooperation among SHGs. By addressing these areas, microfinance can continue to drive sustainable growth and financial inclusion, empowering communities and fostering holistic development in Chennai and beyond.

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