Microfinance Impact on Socio-Economic Empowerment: 
A special Reference to Andhra Pradesh

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Abstract

The present study seeks to examine the role of microfinance and its impact on economic and social empowerment of women. The study used multi-stage stratified proportionate random sampling technique in the selection of the representative district, Mandal/taluka, villages and households. Empirically acclaimed logistic regression model has been employed for analyzing significant impact of plausible socio-economic factors on women empowerment. The study found that the socio-economic indicators have undergone significant changes. It also emerged that there has been an increase in women participation in the household decision making process. The study suggests that the government should prepare suitable plans and programmes for the social and economic empowerment of women. The study also suggests that policy measures such as increase in frequency of SHG meeting, SHG training programme, increase in loan amount and ensuring effective utilization of the loan, may be the useful initiatives to enhance women empowerment, income and employment opportunities.

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1. Introduction

In the recent decades, poverty reduction has become a major focus area for development planners across the globe. This increasing stress on poverty alleviation has become necessary since it was seen that even though countries like India have made rapid strides in all possible fields, vast sections of society continue to languish in conditions of acute poverty (Kabeer, 2003; David, et al., 2004). The fruits of development were not equitably shared between different regions, social classes and even among members of the same social class. Poverty can no longer be considered as the suffering of a few individuals. When poverty is very widespread, it would mean that a very significant portion of the population is particularly vulnerable to scourges like malnutrition, ill-health, illiteracy, ignorance, deprivation and having to live in near sub-human conditions. It is now widely accepted that infrastructure like flyovers, high-rise buildings, gigantic dams, sleek cars and space exploration centres would be almost meaningless if, side by side, we have millions going to sleep on empty stomachs or having to cover their bodies (and protect their dignity) with rags (Datt and Ravallion, 2002; and Dhaongde, 2002; Sharma, 2001). In recent times, poverty is no longer being treated as ‘divinely ordained’. Governments can no longer afford to let conditions of poverty remain unaddressed, since there is a great risk of the feeling of deprivation taking violent forms. Unemployment doles may be a fairly feasible poverty reduction solution in developed countries, but these would be a severe drain on the already strained resources of developing countries. Added to that is the loss of ‘dignity’ of the beneficiaries (Rustagi, 2004; and Satish, 2005).

The global experience has been that women are the major victims of poverty. It is sad to say that many men in such situations may choose to ‘drown their sorrows’ in a bottle of liquor. A woman, on the other hand, will seldom seek such an ‘escape route’. In most cases, she will tend to do her best to see that her children have at least something to eat (even if she has to stay hungry for days on end). She will make do with what little resources available to her to keep the house running. No wonder, in a slightly different context, it has been said that “Educate a man and you would have educated an individual; educate a woman and you would have educated an entire family.” It would, therefore, make economic sense to make women important players in the poverty reduction programmes. As already mentioned, countries like India cannot afford to hand out unemployment doles to the large army of the unemployed. One alternative is to devise empowerment strategies which would impart a feeling of self-confidence to the beneficiaries and tap the latent entrepreneurial talent in them. One observation is that many of the poor are unable to access banks for loans (for taking up income-generation activities) since they generally have no collateral (like property documents) to offer. Micro-finance, through SHGs, is helping a large number of the rural poor (mostly women) to improve the quality of life of their families. The improved financial condition is helping the beneficiaries to become more assertive about their rights and entitlements. This is the backdrop against which the present paper is framed. In the light of the background provided above, the present study seeks to examine the process of women empowerment and changes in the economic status of SHG members in particular and rural women in general. With this broad issue in mind, the following objectives were set for the study, to study socio-economic analysis of SHGs in Selected villages in Andhra Pradesh and to examine how far the microfinance could explore the possibility of women’s participation in decision making, relating to family affairs. This paper is divided into five sections. The first section presents background of the study. The second section describes studies to review of literature related to the subject. Section three present the data and methodology, while the fourth section is analyse results and discussion and finally the summary and conclusion.

2. Review of Literature

The research works pertaining to the very theme of interdependence between microfinance and some socio-economic factors is very rich and it is imperative to sketch a brief narrative of this literature. The socioeconomic empowerment of women through SHGs was explored by Vijayalakshmi and Valarmathi (2008). They pointed out that poverty and empowerment are the major problems in India, and they suggested ways to overcome these two problems through microcredit, i.e., through SHG which is considered as a potential instrument for combating poverty in a sustainable manner. They also found that many have expressed the desire of an improvement in their
level of income, assets, wealth, and standard of living. The contribution made by the microfinance programme initiated by Sahyadri Grameen Bank in Thyagarthi village in Shimoga district of Karnataka was evaluated by Raghavendra (2001). The analyses revealed a significant change among the group members in diversifying income-generating economic activities. The researcher found that the microfinance programme was financially sustainable. The members reported that they no more borrowed from moneylenders. It was found that the members of the SHG formed by the forward community created their own capital base. It was observed that there was a great potential for implementing various programmes for the rural poor through SHGs. Some other studies, for instance, Rahman, et al. (2010), have also assessed the impact of microfinance of rural development schemes on the livelihoods of the rural poor in Bangladesh. They results show that household income, productivity of crops and livestock, expenditure, and employment increased significantly due to the productive use of the finance availed by the beneficiaries. In this study, the logit-model showed that socio-economic factors like age, number of family members in farming, total land size and clients’ ethics and morals of the clients had a positive and significant influence on household income. They concluded that micro investment program had brought about significant and positive changes in the lives of the clients. Micro investment programmes have helped in significantly reducing rural poverty. They recommended that the programme should be replicated in other rural areas of Bangladesh, in order to accelerate economic activities of the poor. Such a finding is also supported by Latif (2001), who measured the effects of microcredit on the household saving of Bangladeshi borrowers. He observed that land size and family size had influence on consumption and calorie intake of rural Bangladeshi households. The study found that saving-income ratio was significantly higher for the participants than for the non-participants. Akter, et. al. (2010) surveyed the impact of community-based organisation (CBO) loans on livelihood improvement. The study found significant improvements in the socio-economic conditions of the beneficiaries. These included; greater awareness, increase in family income, assets, better clothing and food intake and improved sanitation. It was also found that the women participation in the household decision making increased.

Social mobilization envisages education and organization of the poor for improved socioeconomic status through collective efforts. In this dynamic process, the poor will be empowered enough to come out of the dependency syndrome as well as poverty. As a means of empowerment, the social mobilization process involves continuous awareness campaigns among the poor by facilitators/social animators so that the poor can participate in the development process, and thereby, access the basic amenities and resources for socioeconomic betterment. It also provides a suitable framework for holism in development, first, by catering to the needs and aspirations of the poor, and second, by seeking to engineer socioeconomic change on the basic of self-reliance (Radhakrishna and Shovan, 2005). Therefore, as argued, whenever increased self-confidence does not automatically lead to empowerment, it may still contribute decisively to a woman’s ability and willingness to challenge the social injustices and the discriminatory systems that she faces. This implies that as women get financially better-off, their self-confidence and bargaining power within the household increase, which indirectly lead to their empowerment. Finally, the empowerment is a process in which the impact of the microfinance program may take a long time before it is significantly reflected in the observable measures of women empowerment (Cheston and Kuhn, 2002). Hashemi et al. (1996) also found that access to credit is also associated with higher levels of mobility, political participation and involvement in ‘major decision making’ for particular credit organizations.

The impact of microfinance programs on women is not always positive. Women who have set up enterprises benefit only from small increases in income at the cost of heavier workloads and repayment pressures. Sometimes their loans are used by men in the family to set up enterprises, or sometimes women end up being employed as unpaid family workers with little benefit. It has also been seen that in some cases, women’s increased autonomy has been temporary and has led to the withdrawal of male support. It has also been observed that small increases in women’s income have lead to a decrease in male contribution to certain types of household expenditure (Mayoux, 1997). Empowerment of people is a complex process by which the marginalized people become aware of the power dynamics at work in the life context and develop skills and capacity for gaining some control over their lives without infringing upon the rights of others (Rawlands, 1997). In the development context, it is essentially a change of social
relations, change in the attitudes of non-poor as well emphasizing the need for re-negotiations in regard to access and control over resources. A core methodology of social mobilization was suggested for inclusion in the poverty policy frameworks of national and international agencies (Susil, 2001).

Sharma (2001) focused on the exclusive role of SHG in women empowerment and found that significant changes in the living standard of SHG members have taken place, in terms of increase in income levels, assets, savings, borrowing capacity and income generating activities. Similarly, (Sudha et al., 2002) found that participation of women in the SHGs led to their empowerment in areas like, house-management, leadership, economic status, health and sanitation. The self-confidence among women increased due to participation in the SHGs. Conspicuously, women were more empowered when their participation was high in meetings and interactions with different officials. Further a few studies an attempt to study the impact of SHGs on the generation of income and employment was done by (Gangaiah et al., 2006), who found that the loans provided by SHGs had a favorable impact on income generation in the village.

Puhazhendhi and Satyasai (2001) found that the involvement of the rural poor in SHGs significantly contributed to their social empowerment, as measured by improvement in their confidence, their position within the family, improved communication skills and other behavioral changes. They found that SHG, as an institutional arrangement, could positively contribute to the economic as well as social empowerment of the rural poor and the impact on the latter was more pronounced than the former. Furthermore few studies Puhazhendhi and Badatya (2002) stressed on the also social empowerment of sample SHG members, in terms of self-confidence, involvement in decision making, better communication, etc., improved in a significant way. Anand (2002), in his study attempted to show the performance of selected SHGs in Andhra Pradesh and assessed their impact on empowering women. One important observation was that all the members had savings after joining the group. It was also observed that a few members were dominating the groups year after year. In this study, it has been further observed that microcredit through SHGs has created a positive impact on the families of the members.

Scope of the Study

SHGs are fast emerging as a powerful tool for socioeconomic empowerment of the poor in the rural areas. In India, SHGs represent a unique approach to financial intermediation. The approach combines access to low-cost financial services with a process of self management and development for the women who are SHG members. SHGs are seen to confer many benefits, both economic and social. It enables women to expand their savings and access the credit which banks are increasingly willing to lend. SHGs can also be community platforms from which women become active in village affairs, stand for local elections or take action to address social or community issues. The present study aims to examine how far the microfinance could explore the possibility of women’s participation in decision making, relating to family affairs.

Several studies indicate that self help group programmes often in the form of credit or micro credit schemes and savings have succeeded in changing the lives of poor women by making way for enhanced income and increased self esteem. This is a testable proposition for the state of Andhra Pradesh in India since it has been witnessing a massive growth in SHGs in last few years. This study is undertaken to analyse the structure, conduct and performance of self help groups and their impact on women in six villages in Andhra Pradesh. In the light of the background provided above, the present study aims to examine how far the microfinance could explore the possibility of women’s participation in decision making, relating to family affairs.

3. Data and Methodology

Geographically Andhra Pradesh is divided into three distinct regions, namely, Coastal Andhra consisting of nine districts, Rayalasemma four districts and Telangana ten districts. The coastal Andhra is socio-economically more advanced than the other two regions. The study is based on primary data and has used multi-stage stratified proportionate random sampling technique for selection of representative districts, mandals, villages and households. At the first instance, three districts, namely, East Godavari, Chittoor and Karimnagar were chosen on the basis of
one district from each region, i.e., Coastal Andhra, Rayalaseema and Telangana on the existence of highest number of SHGs respectively. In the second stage, from each district, one mandal was selected on the basis of highest number of SHGs. These are Rajahmundry (Rural) from East Godavari district, Madanapalle from Chittoor and Peddapally from Karminagar. In the third stage, from each mandal, two villages were selected on the basis of highest and lowest size of existing SHG. A total of six villages, namely, Torredu and Rajavolu from Rajahmundry Mandal, Chinnathippasamudram (CTM) and Ankisettipalli from Madanapalle Mandal, and Raghavapoor and Brahmanpalle from Peddapalle Mandal were selected. In the fourth stage, SHGs were selected in consultation with VOsi. SHGs linked to the banks for the past two years were selected for the study, assuming that the benefits from the SHG-bank linkage programme would have been fairly well-stabilised by then. In addition, 33% of total members were covered from each selected village (covering not less than 40 members from each village). At the fifth stage, SHG members were randomly selected from each of the selected SHGs. Members were stratified by random sampling, based on the group and caste from selected villages. The total sample size is 582, out of which 176 are Scheduled Castes/Scheduled Tribes (SC/STs), 242 are Backward Castes (BCs) and 164 belong to the Other Castes (OCs) community. The primary data pertains to the year 2010-11. The study is based on a field survey which was conducted during the period May 1 to August 31, 2011.

Empirical analysis

In the following section, a brief note on logit model is given. Since one dependent variable namely, women decision making is qualitative variable, logistic regression model has been employed for analysis of impact of some socio-economic factors on them.

An attempt is made to examine the impact of women decision making in household matter. More specifically, this section explores the proximate determinants of the two dimensions mentioned above. Logistic regression model has been employed for analysis of impact of some socio-economic variables. Since women decision making has been defined by the dummy variable, the study employed the logit regression analysis as the OLS (multiple regression) is not appropriate to the present context. The decision making behavior has undergone changes after the SHG respondents were exposed to the microfinance activities. It is observed that factors such as SHG member age, member marital status, member spouse education and training exert considerable influence on the member decision making. Accordingly, it is hypothesized that the decision making by the members is influenced by factors such as, members age, members education, member marital status, members yearly income, member type of family, member’s spouse education, member’s spouse income, member household income, members takes loan frequently, member member’s borrowed loan amount, member participating training program etc. Accordingly, the following logit model is formulated:

\[
desmak_i = \beta_0 + \beta_1 smemage + \beta_2 smemedcn + \beta_3 mstatus + \beta_4 smincome + \beta_5 ftype + \beta_6 hedcn + \beta_7 hincome + \beta_8 hhincome + \beta_9 nooftimes + \beta_{10} loanam + \beta_{11} training + \epsilon_i \tag{1}
\]

where \( e = probability (\text{DESMAK} = \text{Decision of member to participate in SHG} | X_i = x_i \text{for all } i) \) and \( X_i \) denotes \( i \text{th} \) explanatory variables.

In the above model, the variables are defined as follows:

Binary Variable

\( \text{DESMAK} \) (Women taken decision in household matters)

\( = 1, \text{if decision taken by SHG member in household matters} \)

\( = 0, \text{otherwise} \)

Exploratory Variables

\( \text{SHGMAGE}= \text{SHG members age (in years)} \)

\( \text{SHGMEDCN}= \text{SHG members education (in years)} \)
MSTATUS = 1 if SHG member married
0 = otherwise

SHGMINCM= SHG members yearly income (in Rs)

FTYPE = 1 if size of family is more than 3.
0 = otherwise

HEDCN= SHG member’s spouse education (in years)

HINCOME= SHG member’s spouse income (in Rs)

HHINCOME = SHG member household income (Rs)

NOOFTIMES= frequency of taking loan (in times)

LOANAMT= Loan amount (in Rs)

TRAINING= 1 if SHG member participating training program
0 = otherwise

U_1= Error term

The above model is estimated through a step-wise procedure.

The following are the results obtained from the estimated logit regression model

4. Results and Discussion

The program brings in its wake various economic benefits to SHG members in terms of increased asset creation, enhanced saving and borrowing habits, increased income, higher employment, and improved social lives. The microfinance impacted the social empowerment of sample SHG members in a significant way. The various SHG activities resulted in improving the decision-making capacity of SHG members.

The Decision Maker of the Family: To understand who is the decision maker in the family, data were collected on purchase/sale of household assets, family savings, children’s education and marriage, using a 4-point scale, i.e., (i) SHG Member, (ii) Husband, (iii) Both (Wife and Husband) and (iv) Joint Family Members. It is commonly observed that in a family some decisions are exclusively taken by the spouse i.e., head of the family, while some are exclusively taken by the housewife, and the other decisions are taken jointly by both spouse and wife. There are some other decisions, which are exclusively taken by other members in the family, like the children, parents-in-law, married sons, etc. Of the 582 members, at the time of joining the group, majority had reported that household decisions were taken by their husbands. Now, majority of the members report that household decisions are taken by them jointly with their husbands.

It reveals that women’s role in household decisions increased after joining the SHGs. This is because of the experience gained by the members by attending trainings and meetings. Undoubtedly, training and meeting plays an important role in sharing information, carrying out financial transactions, decision making and enhancing the bargaining power of the SHG members. Compulsory attendance of members in the training and meetings are one of the prerequisites for smooth functioning of the group. It is one of the indicators to ensure the active participation of members in the business of the group in a democratic manner. Table 3 shows that out of 582 selected sample members, nearly 49% have reported that household decisions are taken jointly by their husbands, followed by 32% who reported that their husbands generally take decisions in their family, 12% who reported that household decisions are taken by themselves (SHG members), and 7% of the members reported that usually all family members take the decisions together. According to the norms of the patriarchal society, it is usually the head or the
male members of the household who take certain key decisions. It was found that the increased participation of women in the decision-making processes empowers women in the true sense. Joint decision making in the purchase of business items is observed among all the members belonging to all the villages under study. Thus, it can be concluded that the involvement of spouse is more common for all types of decisions among all the group members.

It is further observed from table 1 that among all selected villages, the percentage of members who reported that household decisions are taken jointly with their husbands, is found to be highest in Rajavolu (53%) and lowest in Ankisettipalle village (38%), while in Raghavapur, Brahmanpalle, CTM, and Torredu villages they are 45.9%, 45.2%, 49.7% and 51%, respectively. The joint decision making by women improved significantly in all aspects investigated. The study found that in all the selected villages majority of all social group members reported that they make household decisions jointly with their husbands in their families. The percentage is found to be highest among the OCs, followed by the BCs. The OC and BC community members are relatively literate and economically sound in comparison to the others. Further, it was observed that among minority community members, majority of them reported that their household decisions are taken by their husbands. It was also observed that among all the selected villages, in Raghavapur, members play a greater and independent role in decision making regarding all matters related to their family is highest.

Analysis of table 1 also reveals that highest percentage of members whose husbands generally take decisions in their family is in Ankisettipalle and lowest in Brahmanpalle village. However, a decreasing role of husbands is observed in the process of decision making as compared to earlier times. This is a positive trend in the process of women empowerment through income generation through SHG-bank linkage. It is also observed that in Ankisettipalle village, the husbands of SC and minority community members played a major role in decision making as compared to other communities. Notably, among all the selected villages, highest joint family decisions are found in Brahmanpalle village.

Overall, the participation of women in decision-making process increased after joining the SHGs. Further, it is informed that the social indicators have been assumed to play an important role in successful implementation of various microfinance programmes. It is observed that the impact of microfinance is relatively more pronounced on the social aspects than on the value of the economic aspects. Thus, it can be ratified that social indicators have made a significant impact on members’ decision making by bringing a positive shift in their social conditions. Further, the social indicators have been assumed to play an important role for successful implementation of various microfinance programmes. As virtually all those who participated in microfinance programme were women, use of social indicators enabled them to move ahead in their economic status on a sustained basis.

Insert Table 1 Here

Spending Family Income: When the control over money earned by women was examined interesting results emerged. 582 SHG members were asked who generally spends family income in their home, and as many as 58% stated that the family income is spent by them jointly with their husbands, followed by 26% who stated that their husbands spend the income, 11% who stated that they spent it themselves (SHG members), and finally, 5% stated that it is spent jointly by their family members. It is important to note that of the 58% members who reported that they spend their family income jointly with their husbands, the highest percentage is recorded in Ankisettipalle, while lowest is recorded in Raghavapur village (see Table 2). Further of all the social groups, the majority of the OC community members reported that their family income is spent by them jointly with their husbands as compared to other community members. The OC community members are reasonably educated and economically strong. Further, it is observed from Table 2 that in Raghavapur, out of 98 members, nearly 41% reported that their husbands play a significant role in spending the family income, and this is highest as compared to other selected villages. This is because majority of the husbands of SHG members of this village work in the non-farm sector, e.g., in mandal headquarters, hence they play a major role in spending the income. It is observed that husbands of majority of the
ST community members play a major role in spending the family income as compared to other communities. This may be because most of the ST members are agricultural laborers and illiterates. The percentage of members who reported that their family income is spent by themselves (SHG members) is found to be highest in Raghavapur and lowest in Ankisettipalle village. It is very interesting to note that among all social group members, the majority of the SC community members reported that their family income is spent by themselves (SHG members), because in this community more members are widows. Table 2 also indicates that in all selected villages, majority of the minority community members reported that their family income is spent by their husbands. Minority community members are in general not interested in going outside. So, they do not the visit market. Instead they send their husband/family members for making purchases.

Insert Table 2 Here

Permission to go to the Market or Visit a Friend’s House: It is clear from Table 3 that out of 582 sample SHG members, about 89% of them takes permission from their husbands for going to the market and visiting their friends’ homes. The village-wise analysis reveals that 94%, 90.9%, 90.9%, 89.2%, 85.7% and 81.6% in Ankisettipalle, Rajavolu, CTM, Torredu, Brahmanpalle and Raghavapur villages respectively take permission from their husbands to go to market or friends’ homes. This table also shows that all the minority community members reported that they take permission from their husbands for going to the market and visiting their friends’ homes. The results indicate the fact that a member belonging to the minority community do not go out without their husbands’ permission. It is very interesting to note that among all social group members, the majority of the SC community members reported that they go to the market and their friends’ homes without their husbands’ permission. The reason is that as most members in this community are widows, there is no need to take permission. It is also observed that majority of the SHG members do not take permission from their husbands to go out belong to Raghavapur village.

Insert Table 3 Here

Improved Confidence Level: To assess the self-confidence levels of SHG members, data was collected on the changes in the self-confidence levels of women in the following aspects: (i) Ability to sign; (ii) Confidence to approach banks and to speak to others; (iii) Improvement in communication skill; (iv) Going alone for medical treatment for self/children; and (v) Handling certain amount of money. The levels of self-confidence and mobility are important constituents of empowerment. Table 4 depicts the changes in the level of self-confidence, if any, over the pre-SHG period in the selected villages. It can be seen from the table that in 88% of the cases there has been an increase in self-confidence after joining the group. Majority of the social group members reported that after joining the SHG there self-confidence increased, because of attending group meetings, communicating with others and participating in various government programs. Now, all the members have the confidence and ability to face visitors because of greater participation in discussions and decision making during group and federation meetings, trainings and exposure visits. The comparison of the selected villages brings out significant variations. In Brahmanpalle village, 100% of the members as compared to 98.5% in Rajavolu, 96.4% in Torredu, 91.8% in Raghavapur, 82% in Ankisettipalle and 74.9% in CTM reported that there is a change in their confidence level after joining the group. The trend of increase in self-confidence is observed among all the communities: OCs (89.4%), followed by SCs (88.5%), BCs (87.6%), minority (87%) and STs (80%). It may be observed from Table 4 that very few members, i.e., 12% reported that there was no change in their self-confidence after joining the SHG. Further, it is observed that among the members who reported that there was no change in their self-confidence, majority belong to the ST community, followed by the minority.

Insert Table 4 Here

Nutritional Status: Taking nutritious food is very important for any persons’ health. Out of the selected sample, 86% reported that their nutrition status has significantly improved after joining the SHGs (see Table 5). It is important to note that in all selected villages, majority of the members reported that there was a significant improvement in their nutritional status after joining the groups. It was observed that in Brahmanpalle and Rajavolu
villages, 100% of the members reported that after joining the groups there has been a change in their nutritional status. Further, it can be deduced from Table 5 that majority of the minority (91.3%), OC (89.9%), BC (86.5%) and ST (75%) community members reported significant improvement in their nutritional status after joining the groups. Further, it can be seen that 14% of the members reported no change in their nutritional status even after joining the SHGs. It was further observed that in CTM village 50% of the SC members reported that there was no change in their nutritional status even after joining the group, because of their poor economic conditions. It is also observed that among the SC/ST members the nutritional status did not change much after availing group loan, since the loan amount was mainly used for consumption and house construction purposes and not for income-generation activities.

**Insert Table 5 Here**

Improved Sanitation: Regarding the issue of change in the level of awareness about health and hygiene during the period of membership, the data shows that substantially large percentage of respondents have a positive perception. Table 6 shows that 70% of the members said that their awareness regarding sanitation has improved after joining the groups. It is observed to be highest in Brahmanpalle, followed by Rajavolu, Torredu, Ankisettipalle, CTM and Raghavapur villages. It is found that in Raghavapur village, majority of the members reported that there was no improvement in their awareness about sanitation even after joining the SHGs. In this village, majority of the SC community members reported that there was no significant increase in their awareness about sanitation after joining the SHGs. Before joining SHGs, the SC community members mainly worked as agricultural laborers, were engaged in daily wage labor, and were economically very poor. In the case of BC community, majority of the members reported that there was a significant increase in their awareness about sanitation after joining SHGs. It is important to note that in all selected villages, except Raghavapur majority of all the social group members reported that there was a significant increase in their sanitation awareness after joining the groups. Table 6 also indicates that among all social group members, highest of the minority community members (87%), followed by OC (86.5%), BC (66.5%), SC (62.2%) and ST (50%) reported that there was a significant increase in their awareness about sanitation after joining the groups. It is implied that the rural people are unaware of the importance of proper sanitation. In these circumstances, the government should provide them with better sanitary outlets free of cost. At present, the government provides Rs.3,000 for construction of toilets. This is inadequate and government should try and bear the entire cost of construction.

**Insert Table 6 Here**

The issue of microfinance is fast emerging as a fascinating field for study for scholars, both in India and other developing countries. Let us review some of the topical literature on the subject. Deshmukh (2004) in his study on the impact of SHGs in Andhra Pradesh showed that there has been an increase in the economic activity, savings, income, and financial assets of the group members after joining SHGs. Apart from economic progress, joining SHGs has made the members socially aware. This has resulted in better family planning and adoption of healthy habits. Further in Bangladesh, (Khandker et al., 1998) find that program participation has positive impacts on household income, production, and employment, particularly in the rural non-farm sector, and that the growth in self-employment was achieved at the expense of wage employment, which implies an increase in rural wages. An evaluative study of the Rashtriya Gramin Vikas Nidhis (RGVNs) credit and savings program was taken up by (Borbora and Mahanta, 2001) the study first, examined the role of microcredit in the generation of income for the poor. Second, it assessed the role of SHGs in promoting the savings habit among the poor. Further a few studies an attempt to study of six microfinance programmes in Africa,(Mosley, 2002) found substantial qualitative evidence that targeting microcredit to the poor, and poor women in particular, enhances human capital through increased expenditure on consumption and education and related improvements in health. He found this to have had a positive impact on measures of welfare, with women beneficiaries tending to attach a higher value to the concept of well-being.
The SHG-bank linkage programme distinctly differs from other microfinance programmes across the world mainly in terms of its greater emphasis on savings. The basic philosophy here is ‘saving first and credit next’, which is perceived to be one of the strongest aspects of the programme. The concept of microcredit is based on the principle that the members will develop the habit of thrift before they themselves avail the loans. The savings of an individual member not only helps him to avail a loan for himself, but also provides the seed money for the lending operation of the SHG. It has resulted in generating awareness among the women regarding saving a rupee per day for future income generation. Therefore, while every member of the group had initial savings of Rs. 30 per month, they now have a savings of Rs.100 per month, because members in various villages borrowed huge amounts from banks and spent the amount on non-farm sector, which in turn, led to increased income and increased savings of the members. It is evident from Tables 7 that the savings of 93 per cent of the members reported that their monthly saving improved and rest of the 9 per cent of the members reported that their monthly saving no change, these members are belonging to SC community. It is very interesting to note that among all the social group members, majority of the SC members’ monthly savings is less than Rs.100. The study found that among SC, after availing group loan, there was no significant improvement in their income because SCs are not able to save more money as they are economically very poor and also they do not have any sources for repaying the loans. Majority of the SC SHG members are dependent on agriculture labor and daily labor for their livelihood. The groups mentioned the following reasons for the increase in the monthly savings amount: (1) To increase individual savings; (2) To increase the group’s corpus; (3) To obtain bank linkage; (4) To get a larger loan since the amount of savings is one of the criteria for bank’s decision regarding the quantum of loan; and (5) Since the household income have increased, the SHGs have also increased their monthly savings amount.

Insert Table 7 Here

The objective of microfinance is to help the poor people to build their productive capacity, become self-employed and improve their quality of life. It has been documented that the loans provided by the SHGs had a positive impact on different socioeconomic groups in generating income and employment. The members, in the initial stages, normally borrow for meeting consumption needs. They then slowly shift their focus to income and employment generation purposes, which require a higher amount of loans. In any activity agriculture or non-agriculture, the relationship between generation of income and employment opportunities or potential of employment can be judged based on the amount of income generated. The increase in employment opportunities lead to increase in earnings. Puhazhendhi and Satya (2001) conducted a survey of 223 SHGs functioning in 11 states representing four different regions of the country. For assessing the impact of the program, pre-SHG and post-SHG situations were compared. Their study found that average net income/household income increased by about 33%(from Rs.20,177 to Rs.26,889)over the pre and post-group formation periods. The study concluded that SHG as an institutional arrangement could positively contribute to the economic and social empowerment of the rural poor. Another study conducted by Puhazhendhi (2000) in Tamil Nadu covering 70 SHGs and 1,041 members, found that net incremental income due to the program implementation was Rs.2,424 for all groups and it was relatively more in good performance groups (Rs.1,650 and Rs.1,299 respectively).Sebastian(2001) conducted a survey of 340 SHG members, drawn from SHGs functioning under NGOs in Central Tamil Nadu and found that the overall average incremental income for all households who took loans for productive purpose was Rs.376.75 per month. More than 60% of the members reported a monthly increase in income of above Rs. 300 arising out of income-generating activities.

Studies on Grameen Bank have, in general, shown a positive change in the income of the beneficiaries. However, all these studies use recall method, and therefore, suffer from memory bias. Further, these studies have not attempted to isolate the income flows from assets acquired through loans. Therefore, comparing the beneficiary income with a control group’s income, rather than its own income will be a reliable method. Pallavi and Ramakumar (2002) in their analysis concluded that both NGO-led microcredit and state-led credit institutions have led to positive, but only marginal, increases in the earnings of their beneficiaries. However, given the methodological problems associated with studies on income changes, more empirical evidence is required in order to substantiate such a conclusion. In
rural areas, households are engaged in diversified occupations for their livelihood. Therefore, we arrive at the total annual income, by summing income from small business activities, agriculture labor, cultivation, non-agriculture wage labor and private employers.

The distribution of monthly income of the SHGs members shows that before formulation of SHGs, the monthly income of the members in the region was very low and most of them were in the below poverty line category. However after the formulation of SHGs, the incomes of the members have increased significantly. When asked whether the programme had impacted their family life, several women said that rising incomes had led to greater family harmony as they had now had less financial woes. This had contributed to a greater sense of well-being and contentment. It is important to note that in all regions, nearly 93 per cent of the members reported that their income level increased due to members started different types of income and employment generation activities (see Table 8). It seems that the loan obtained from the SHG-bank linkage had an adverse impact on income generation of SC community members. But, in the case of both BC and OC community members its impact seems to be favorable in all the selected villages.

**Insert Table 8 Here**

It is believed that whenever people are able to obtain adequate income, they generally invest it productively towards the improving the quality of their lives. It is largely believed that income has a positive effect on consumption expenditure, in general and education and health, in particular. During focus group interviews, members said that while all village families could afford to send their girl and boy children to primary school, a small number could not afford to send their children to middle school and a significant number still could not afford to send their children to high school. They said that this was an improvement over the situation five years before, and they attributed this improvement to rising incomes. Table 9 also shows that 89 per cent and 88 per cent of the members responded that their children education and household assets respectively changed.

**Insert Table 9 Here**

**Logit model empirical results presentation and analysis**

(i) **Microfinance Impact on Women Decision Making Proximate Determinants**

The study formulated one equation [equation 3] and estimated with logistic regression technique since in the dependent variable is qualitative in nature. When standard logistic regression technique is employed for the equation log of odd ratio in favour of the event under consideration becomes the dependent variable in the equations. For example, in the third equation dependent variable is the log of odd ratio in favour of taking decision by the member in respect of household activities non-taking decision. Estimates of equation (3) are given in table 10.

**Insert Table 10 Here**

A woman is an important player in household matters. It is she who primarily runs the kitchen and looks after the family members-her husband, children, younger siblings and elders (in case it is a joint family). Since she has the basic responsibility of running the household, she can logically expect to have a reasonable say in matters concerning the family. The issues may include: food, clothing, education of children, saving and expenditure to meet social obligations. Furthermore, according to the SHG members, the subordinated role of women and unbalanced gender power relations in the study area are fast becoming things of the past thanks to microfinance. In other words, access to microfinance has brought substantial changes to gender power relations at the household and community levels. Indeed, the study find that the gender power relations gaps are being bridged because women who had benefited from microfinance had improved contribution to household incomes and this has earned them respect among their male counterparts. Thus their male counterparts now see women as partners in decision making at all levels.
Microfinance through SHGs can contribute to women empowerment. Empowerment is a slow and continuous process and the mere joining of SHG does not lead to empowerment. It takes some time to get the full benefits of the programme. This study shows that microfinance program has helped women in increasing their economic empowerment and as a result they have started taking some household firm decisions independently. Table 2 presents estimates of impact of social and economic factors on decision-making. The results show that out of eleven socio economic factors, six have statistically significant impact on decision making of SHG members. Reported coefficients signify change in log of odd ratio in favour of the decision of member to participate in SHG due to one unit change in each explanatory variable. The results show that if the concerned SHG members are married then log of odd ratio in favour of taking decision by the women will go up by 0.8750 units. Hence, marital status also plays an important role for the SHG members’ decision making. Usually, married women depend on their spouse’s income for meeting the household expenses. A rural woman normally does not have a scope to earn money without the permission of her in-laws. Now, with rapidly increasing cost of living both in rural and urban areas, it is becoming increasingly difficult to run a household with a single person’s income. In addition, when the family size is large, a woman may not be able to manage the family expenditure with her spouse’s income alone. Hence, after marriage, out of necessity, women tend to undertake some income-generating activities to enhance their family income.

The regression estimates in Table 2 show that when SHG member’s income goes up by one unit (rupee) log of odd ratio in favour of taking the decision by women will go up marginally by 0.0005 units. In a family where the male is the sole earner, he may assert that he alone is ‘empowered’ to decide on family issues (especially the financial ones). Today, financial stringency is forcing many women to start earning money. There is every possibility that such women would feel that they should have a reasonable say in household issues. Their argument may be that since they too are earning money and are not solely dependent on the male members of the family, they should be allowed to have an important role in household matters. Similarly log of odd ratio goes up by 0.5720 units if family size under consideration is large. Family is usually of two types, joint family and nuclear family. Similarly, the study observes that most of the nuclear families have been having more monthly saving than joint families. Log of odd ratio also increases marginally by 0.0004 units if husband income of the SHG members increases by one rupee. The level of income of a family can have an important bearing on its quality of life. When the income level is low, the expenditure pattern should logically be expected to be low as well (granted that the family does not take loans to meet its expenses and fall into further financial stringency). However, a high level of income does not always guarantee a high quality of life. There is always the risk of the family indulging in wasteful expenditure-at the cost of meeting the more pressing needs. A possible scenario is that in low income families, most of the decisions are ‘enforced’ ones- to primarily meet the pressing needs. On the other hand, in a high income family, women could enjoy a greater say in household matters.

Further, if a member takes loan frequently, then by one time then log of odd ratio in favour of taking decision making will go up by 0.0250 units. If the member’s borrowed loan amount goes up by one rupee then the log of odd ratio in favour of taking decision by the woman will inch up by 0.0010 units. The SHGs provide loans to their members for investing and to get access to income-generating opportunities. As employment opportunities increase, automatically purchasing power will increase which in turn will lead to economic growth. An amazing fact noticed in the recent decades is that Financial Institutions are finding women borrowers to be more diligent than their male counterparts. No wonder, the success of Bangladesh’s Grameen Bank is largely attributed to the sincerity of its women clients. An increasing number of SHGs are reporting that women in general tend to utilize the borrowed amounts for income generating activities.

The training of SHG members plays crucial role because it is training which makes them financially literate. In detail, undoubtedly, training plays an important role in sharing information, carrying out financial transactions, decision making and enhancing the bargaining power of the SHG members. Compulsory attendance of members in the training is one of the prerequisites for smooth functioning of the group. It is one of the indicators to ensure the active participation of members in the business of the group in a democratic manner. The results show that the log of
odd ratio in favour of taking decision by the women will go up by 0.1858 units when member is trained. Therefore, participation in training programme is an important indicator of being practically empowered, especially when the SHG member is sufficiently aware of the basic banking operations and is able to handle her savings account on her own. The guideline of the government is that members of the group should visit the bank at least once in a month and minimum of two women member should go together to the bank. The rationale for such policy is that the women should not confine themselves within the four walls of the house and at the same time should get some exposure to financial matters. By this, they improve contacts, can voice their views and get some idea of financial transactions.

SHG member household income and SHG member annual income are found to affect log of odd ratio adversely. This finding is in consonance with economic intuition, since a member of any well off family will have lesser chance to join the SHG. Increase in loan amount affects odd ratio adversely. Other variables like SHG member education as well spouse education status, frequency of taking loan, etc., have no considerable impact on decision making of SHG membership.

5. Summary and Conclusion

The microfinance system has brought about an unprecedented change in the lifestyles of women in rural areas. The streamlining and effective operation of credit system will entirely transform rural lives. The empowerment through SHGs would impact rural women by giving them immense confidence to mould their lives and that of their families. In this light, the present study examined the financial status of women in pre-and post-SHG scenarios and also investigated the impact of micro financing on women. For the purpose, the study has examined various economic benefits to SHG members in terms of increased asset creation, enhanced saving and borrowing habits, increased income, higher degree of empowerment and improved social lives. The empirical examination shows that the SHG-bank linkage programme has a positive impact on decision making by women in household matters. In addition, it has brought about changes in their attitudes against social evils such as gender discrimination and the dowry system, and it has enabled them to advocate for equal property rights, education, the fair treatment of girls and widow remarriage. Empirical findings suggest that participation and decision making by women members is positively influenced by SHG members’ age, marital status, income, family type, along with economic factors, have statistically significant impact on decision making. The major findings of the study are that microfinance activities have altered the living condition of the SHG members, and these activities have also contributed to social empowerment of women. The major findings of the study are (i) microfinance activities have altered the living condition of the SHG members, (ii) these activities have also contributed to social empowerment of women. However, policy measures such as an increase in frequency of SHG meeting, SHG training programme, increase in the loan amount and ensuring effective utilization of the loan, may be the useful initiatives to enhance women empowerment, income and employment opportunities.

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Table 1: Village-Wise Frequency of Decision Making by SHG Members

| Decision Making | Raghavapur | Brahmanpalle | CTM | Ankisettipalle | Torredu | Rajavolu | Total |
|-----------------|------------|--------------|-----|---------------|---------|----------|-------|
| Self            | 17(17.3)   | 6(14.3)      | 17(9.1) | 7(17.0)      | 18(13.0) | 7(10.6) | 72(12.4) |
| Husband         | 28(28.6)   | 10(23.8)     | 66(35.3) | 18(36.0)      | 43(31.0) | 20(30.3) | 185(31.8) |
| Jointly with husband | 45(45.9)   | 19(45.2)     | 93(49.7) | 19(38.0)      | 71(51.0) | 35(53.0) | 282(48.5) |
| Jointly family  | 8(8.2)     | 7(16.7)      | 11(5.9)  | 6(12.0)       | 7(5.0)  | 4(6.1)   | 43(7.3)  |
| Total           | 98 (100)   | 42 (100)     | 187(100) | 50 (100)      | 139 (100)| 66 (100) | 582 (100) |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 2: Village-Wise Frequency of Income Spend by the Family Members of SHG Members

| Income Spend by | Raghavapur | Brahmanpalle | CTM | Ankisettipalle | Torredu | Rajavolu | Total |
|-----------------|------------|--------------|-----|---------------|---------|----------|-------|
| SHG Member      | 15 (15.3)  | 5 (12.0)     | 25 (13.4) | 2 (4.0)       | 14 (10.0)| 4 (6.1) | 65 (11.2) |
| Husband         | 40 (40.9)  | 13 (31.0)    | 41 (21.9) | 12 (24.0)     | 21 (15.1)| 22 (33.3)| 149 (25.6)|
| Jointly with husband | 38 (38.8) | 22 (52.4) | 114 (61.0) | 35 (70.0) | 95 (68.4) | 35 (53.0) | 339 (58.2) |
|----------------------|-----------|-----------|------------|----------|----------|----------|-----------|
| Family Members       | 5 (5.1)   | 2 (4.6)   | 7 (3.7)    | 1 (2.0)  | 9 (6.5)  | 5 (7.6)  | 29 (5.0)  |
| Total                | 98 (100)  | 42 (100)  | 187(100)   | 50 (100) | 139 (100)| 66 (100) | 582(100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 3: Village-Wise Frequency of Permission Needed to Visit Market/Friend’s Home by SHG Members

| Permission | Name of the Village | Total |
|------------|---------------------|-------|
| Yes        | Raghavapur          | 80 (81.6) |
|            | Brahmanpalle        | 36 (85.7) |
|            | CTM                 | 169 (90.9) |
|            | Ankisettipalle      | 47 (94.0) |
|            | Torredu             | 124 (89.2) |
|            | Rajavolu            | 60 (90.9) |
| No         | Raghavapur          | 18 (18.4) |
|            | Brahmanpalle        | 6 (14.38) |
|            | CTM                 | 17 (9.1)  |
|            | Ankisettipalle      | 3 (6.0)   |
|            | Torredu             | 15 (10.8) |
|            | Rajavolu            | 6 (9.1)   |
| Total      | Raghavapur          | 98 (100)  |
|            | Brahmanpalle        | 42 (100)  |
|            | CTM                 | 187(100)  |
|            | Ankisettipalle      | 50 (100)  |
|            | Torredu             | 139 (100) |
|            | Rajavolu            | 66 (100)  |
|            | Total               | 582(100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 4: Village-Wise Status of Self-Confidence of the SHG Members

| Self-Confidence Status | Name of the Village | Total |
|------------------------|---------------------|-------|
| Increase               | Raghavapur          | 90 (91.8) |
|                        | Brahmanpalle        | 42 (100)  |
|                        | CTM                 | 140 (74.9) |
|                        | Ankisettipalle      | 41 (82.0) |
|                        | Torredu             | 134 (96.4) |
|                        | Rajavolu            | 65 (98.5) |
| Total                  | Raghavapur          | 98 (100)  |
|                        | Brahmanpalle        | 42 (100)  |
|                        | CTM                 | 187(100)  |
|                        | Ankisettipalle      | 50 (100)  |
|                        | Torredu             | 139 (100) |
|                        | Rajavolu            | 66 (100)  |
|                        | Total               | 582(100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 5: Village-Wise Status of Nutritional Betterment of the SHG Members

| Status of Nutritional Betterment | Name of the Village | Total |
|----------------------------------|---------------------|-------|
| Increase                         | Raghavapur          | 86 (87.8) |
|                                  | Brahmanpalle        | 42 (100)  |
|                                  | CTM                 | 137 (73.3) |
|                                  | Ankisettipalle      | 38 (76.0) |
|                                  | Torredu             | 134 (96.4) |
|                                  | Rajavolu            | 66 (100)  |
| Total                            | Raghavapur          | 98 (100)  |
|                                  | Brahmanpalle        | 42 (100)  |
|                                  | CTM                 | 187(100)  |
|                                  | Ankisettipalle      | 50 (100)  |
|                                  | Torredu             | 139 (100) |
|                                  | Rajavolu            | 66 (100)  |
|                                  | Total               | 582(100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 6: Village-Wise Status of Improvement in Sanitation Awareness of the SHG Members

| Status of Sanitation Awareness | Name of the Village | Total |
|--------------------------------|---------------------|-------|
| Increase                       | Raghavapur          | 47 (47.9) |
|                                  | Brahmanpalle        | 42 (100)  |
|                                  | CTM                 | 115 (61.5) |
|                                  | Ankisettipalle      | 37 (74.0) |
|                                  | Torredu             | 109 (78.4) |
|                                  | Rajavolu            | 60 (90.9) |
|                                  | Total               | 410 (70.4) |
| No Change                       | Raghavapur          | 51 (52.1) |
|                                  | Brahmanpalle        | 0 (0)  |
|                                  | CTM                 | 72 (38.5) |
|                                  | Ankisettipalle      | 13 (26.0) |
|                                  | Torredu             | 30 (21.6) |
|                                  | Rajavolu            | 6 (9.1)   |
|                                  | Total               | 172 (29.6) |
Table 7: Village-Wise Status of Improvement in Saving of the SHG Members

| Improvement | Name of the Village | Total |
|-------------|---------------------|-------|
|             | Raghavapur | Brahmanpalle | CTM | Ankisettipalle | Torredu | Rajavolu |     |
| Yes         | 98 (100)   | 42 (100)     | 185 (98.9) | 49 (98.0) | 134 (96.4) | 63 (95.5) | 571 (98.1) |
| No          | 0 (0)      | 0 (0)        | 2 (1.1)    | 1 (2.0)   | 5 (3.6)    | 3 (4.5)   | 11 (1.9)   |
| Total       | 98 (100)   | 42 (100)     | 187 (100)  | 50 (100)  | 139 (100)  | 66 (100)  | 582 (100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 8: Village-Wise Status of Improvement in Income of the SHG Members

| Income | Name of the Village | Total |
|--------|---------------------|-------|
|        | Raghavapur | Brahmanpalle | CTM | Ankisettipalle | Torredu | Rajavolu |     |
| Yes    | 95 (96.9)   | 41 (97.6)     | 172 (92.0) | 49 (98.0) | 126 (90.6) | 57 (86.4) | 540 (92.8) |
| No     | 3 (3.1)     | 1 (2.4)       | 15 (8.0)   | 1 (2.0)   | 13 (9.4)   | 9 (13.6)  | 42 (7.2)   |
| Total  | 98 (100)    | 42 (100)      | 187 (100)  | 50 (100)  | 139 (100)  | 66 (100)  | 582 (100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 9: Village-Wise Status of Improvement in Household assets and Children Education Awareness of the SHG Members

| Improvement status | Name of the Village | Total |
|--------------------|---------------------|-------|
|                    | Raghavapur | Brahmanpalle | CTM | Ankisettipalle | Torredu | Rajavolu |     |
| Household assets   |           |               |     |                 |        |         |     |
| Yes                | 90 (91.8) | 39 (92.9)     | 162 (86.6) | 46 (92.0) | 123 (88.5) | 54 (81.8) | 514 (88.3) |
| No                 | 8 (8.2)   | 3 (7.1)       | 25 (13.4)  | 4 (8.0)   | 16 (11.5)  | 12 (18.2) | 68 (11.7)  |
| Total              | 98 (100)  | 42 (100)      | 187 (100)  | 50 (100)  | 139 (100)  | 66 (100)  | 582 (100)  |
| Education          |           |               |     |                 |        |         |     |
| Yes                | 93 (94.9) | 38 (90.5)     | 169 (90.4) | 47 (94.0) | 114 (82.0) | 54 (81.8) | 515 (88.5) |
| No                 | 5 (5.1)   | 4 (9.5)       | 18 (9.6)   | 3 (6.0)   | 25 (18.0)  | 12 (18.2) | 67 (11.5)  |
| Total              | 98 (100)  | 42 (100)      | 187 (100)  | 50 (100)  | 139 (100)  | 66 (100)  | 582 (100)  |

Note: Figures in parentheses are percentages.
Source: Authors field survey

Table 10: Estimates of Impact of Social and Economic Factors on Decision making

| variables     | Coefficient | Std. Err | P>|Z| |
|---------------|-------------|----------|-----|
| Smenage       | -0.1826     | 0.1087   | 0.093 |
| Smedecn       | -0.0485     | 0.2212   | 0.826 |
| Mstatus       | 0.8757      | 0.5230   | 0.094 |
| Smincome      | 0.0005      | 0.0001   | 0.000 |
| Ftype         | -0.5720     | 0.2257   | 0.011 |
| Hedcn         | -0.0200     | 0.2586   | 0.938 |
| Hincome       | 0.0000      | 0.0000   | 0.002 |
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|             |   |   |   |
|-------------|---|---|---|
| Hhincome    | -0.0000 | 0.0000 | 0.000 |
| Nooftimes   | 0.0250  | 0.0896 | 0.779 |
| Loanamt     | -0.0000 | 0.0000 | 0.199 |
| Training    | -0.1855 | 0.2268 | 0.413 |
| Cons        | 0.9307  | 0.9339 | 0.319 |

Number of observation 582
LR chi2 (11) 43.0000
Prob> chi2 0.0000
Pseudo R2 0.0561
Log likelihood -361.8331

Source: Authors field survey

1 Andhra Pradesh state is bifurcated into two states as Telangana and Andhra Pradesh in 2014

4 For this purpose, the lists of SHGs were collected from VOs of each of the sampled villages. Separate lists of total SHGs, SHGs with two years of bank linkage and caste-wise SHGs were considered. Out of these lists, those SHGs which existed for two years as on March 31, 2009 were separated out to form the lists of SHGs as eligible for this study.

The Logit Model

Logistic regression was proposed in the year 1970 as an extension of traditional ordinary least square method and to overcome its limitation in incorporating dichotomous or binary variables as dependent variables. The logit models become extremely popular in the fields of social sciences because a large number of variables like gender, caste, marital or educational status etc., come under its domain are qualitative in nature. Social scientists like (Afifi and Clerk, 1990), (Ryan, 1997) and (Tabachnick and Fidell, 2001) recognised and acknowledged the importance of logit model as a useful alternative to linear regression modeling technique.

Let us consider a binary response variable Y and an explanatory factor, say, X. A logit model predicts the log of odd ratio of Y from predetermined variable X. A simple logit model can be represented as:

\[
\ln \frac{e}{1-e} = \alpha + \beta x = \log \text{ (odds)} \tag{1}
\]

Where e = probability \((Y = \text{outcome of interest} \mid X=x) = \frac{e^{\alpha + \beta x}}{1+e^{\alpha + \beta x}}\)

Extending the logit model for multiple predictors, a complex logistic model can be constricted as follows:

\[
\ln \frac{e}{1-e} = \alpha + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k \tag{2}
\]

Where e is the probability of occurrence of the event and all \(\beta_k\) are slope coefficients capturing marginal effect of each explanatory variables and \(\alpha\) is intercept term. All the parameters are estimated by maximum likelihood (ML) method. \((e/(1-e))\) is called odd ratio in favour of the event under consideration. Interpretation of all \(\beta_k\) coefficients is a little tricky in logit models. For example interpretation of coefficient \(\beta_2\) in equation 2 is as follows- a unit change in
x₂ will cause \((e^{β₂} - 1)\times 100\) percentage change in odd ratio in favour of the event under consideration. Similarly other slope coefficients can be interpreted in the model.

### Appendix

ii Andhra Pradesh state is bifurcated into two states as Telangana and Andhra Pradesh in 2014

For this purpose, the lists of SHGs were collected from VOs of each of the sampled villages. Separate lists of total SHGs, SHGs with two years of bank linkage and caste-wise SHGs were considered. Out of these lists, those SHGs which existed for two years as on March 31, 2009 were separated out to form the lists of SHGs as eligible for this study.

### The Logit Model

Logistic regression was proposed in the year 1970 as an extension of traditional ordinary least square method and to overcome its limitation in incorporating dichotomous or binary variables as dependent variables. The logit models become extremely popular in the fields of social sciences because a large number of variables like gender, caste, marital or educational status etc., come under its domain are qualitative in nature. Social scientists like (Afifi and Clerk, 1990), (Ryan, 1997) and (Tabachnick and Fidell, 2001) recognised and acknowledged the importance of logit model as a useful alternative to linear regression modeling technique.

Let us consider a binary response variable Y and an explanatory factor, say, Xᵢ. A logit model predicts the log of odd ratio of Y from predetermined variable Xᵢ. A simple logit model can be represented as:

\[
\ln \frac{e}{1-e} = α + β x = \log(\text{odds}) \tag{1}
\]

Where \(e = \text{probability}\ (Y=\text{outcome of interest} \mid X=x) = \frac{e^{α+βx}}{1+e^{α+βx}}\)

Extending the logit model for multiple predictors, a complex logistic model can be constricted as follows-

\[
\ln \frac{e}{1-e} = α + β₁x₁ + β₂x₂ + \ldots + βₖxₖ \tag{2}
\]

Where \(e\) is the probability of occurrence of the event and all \(β_i\) are slope coefficients capturing marginal effect of each explanatory variables and \(α\) is intercept term. All the parameters are estimated by maximum likelihood (ML) method. \((e/1-e)\) is called odd ratio in favour of the event under consideration. Interpretation of all \(β_i\) coefficients is a little tricky in logit models. For example interpretation of coefficient \(β₂\) in equation 2 is as follows- a unit change in \(x₂\) will cause \((e^{β₂} - 1)\times 100\) percentage change in odd ratio in favour of the event under consideration. Similarly other slope coefficients can be interpreted in the model.
