



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Performance of Dairy Self Help Groups (SHGs) in India: Principal Component Analysis (PCA) Approach

S.M. Feroze and A.K. Chauhan*

I

INTRODUCTION

Microfinance has evolved as an accepted institutional framework to provide financial services to the poor in the developing countries and Self Help Groups (SHGs) are considered as the vehicle for advancement of microcredit to them. But microfinance through SHGs is a “credit-plus approach”, i.e., it not only provides small, timely and easy loan to the poor without any collateral but also inculcates saving behaviour amongst them (LOGOTRI, 2006). According to Datta and Raman (2001) group members save a minimum pre-determined fixed amount per month or per week by a SHG member but there is no ceiling. Provision of penalty is there if any member fails to deposit the personal saving amount (Borbora and Mahanta, 2001; Kumar, 2005). Microfinance schemes using SHGs have enabled the poor to have an easy and continued access to an easy source of credit (Karmakar, 1999; Shylendra, 1999). These SHGs provide both productive as well as consumption loans to their members. Members borrow from the groups for varied reasons ranging from domestic purpose to economic activities (Borbora and Mahanta, 2001; Puhazhendi and Badatya, 2002). Awasthi *et al.* (2001) reported that women SHG members in Madhya Pradesh engaged themselves in mahua and mushroom cultivation, amchur papad making, pisciculture, nursery etc. However, Madheswaran and Dharmadhikary (2001) found that loans were used mainly for purchase of livestock, goats and fishing nets. Unlike the individual loans in case of group loans where the responsibility of repayment lies on the whole group the repayment rates are quite high. SHGs repay the loans in equal monthly or weekly instalments (Borbora and Mahanta, 2001; Madheswaran and Dharmadhikary, 2001). Much of the success of microfinance programme depends on the successful functioning of these informal groups. So, it

*Assistant Professor (Economics), School of Social Sciences, College of Post Graduate Studies, Central Agricultural University, Umiam-793 103, Meghalaya and Principal Scientist (Agricultural Economics), Division of Dairy Economics, Statistics and Management, National Dairy Research Institute (NDRI) (Deemed University), Karnal -132 001 (Haryana), respectively.

The authors are thankful to J.P. Dhaka, Ms. Smita Sirohi, R. Malhotra and K.S. Kadian for their advice. Due acknowledgement is being paid to Indian Council for Agricultural Research (ICAR) and NDRI for funding the research.

This paper is part of the author's Ph.D. (Dairy Economics) thesis submitted to National Dairy Research Institute (Deemed University), Karnal, India in 2009.

becomes imperative to have an insight on the performance of these groups. As dairy farming is one of the major purpose for which SHG members take loan from the groups in India, this paper attempts to assess the overall performance of dairy SHGs in Haryana.

II

METHODOLOGY

Haryana state was selected purposively mainly due to existence of a large number of dairy SHGs and lack of extensive empirical studies. Out of two agro-climatic zones, i.e., Eastern Zone and Western Zone (Ghosh, 1991) of the state, the Western Zone was selected purposively due to presence of comparatively higher number of SHGs. Fatehabad and Mewat districts were randomly selected from the Western Zone of the state. Bhuna, Fatehabad and Jakhal were the three developmental blocks selected randomly from Fatehabad district and Feroze Pur Jhirka, Hathin and Nuh were selected randomly from Mewat district. From these blocks, 30 SHGs which have already completed at least two years since its inception and have received dairy loans were selected randomly from each district; hence, a pre-determined sample of 60 SHGs was drawn from the Western Zone. Two members were selected randomly from each of the selected dairy SHGs. Thus, 60 members from a district and a total of 120 members from the Western Zone were selected. The individuals who have received loans for dairy farming were selected as individual members.

Data

The study makes use of both primary and secondary data. Secondary data were gathered on the structure of SHGs and performance indicators such as, savings, credit, repayment and income generation activities were collected from the registers and records maintained by the SHGs for their entire period of existence. Primary data on different socio-economic variables were collected from the SHG members with the help pre-tested schedules during the period of 2007-08. Tabular analysis was employed to the collected data after scrutiny to assess the performance of the SHGs in the study area.

Performance of SHGs

The performance of SHGs was evaluated on the basis of savings performance, loaning performance, repayment performance and income and employment generation activity.

Saving performance is measured by actual savings over planned savings (ratio of actual savings to planned savings). Each group initially decides upon the amount and frequency of savings contribution. Multiplying the savings contribution by its

monthly frequency, the number of members and the number of months since inception (taking into account changes in the saving contribution and drop outs) gives us the amount the group should have saved at the time of survey. Comparing this amount with the group's savings, i.e., its cash holdings and the balance on its bank account, adjusted for intra-group loans, non-repaid outside loans and profits from income generating activities, gives an indication of the group's savings discipline.

The intra-group loaning/lending (loans disbursed to group members by the SHGs) performance was measured by the percentage of members who have received internal loans. This variable reflects the outreach of intra-group activity. The performance of external credit (loans disbursed to SHGs by external financial agencies) was captured by the ratio of external credit to the actual group savings. This indicates the access to outside credit and its order of magnitude.

To judge the repayment performance both internal repayment performance (between the members and credit group) and external repayment performance (between the credit group and lender) were evaluated. Internal Repayment Rate (between the members and credit group) and External Repayment Rate (between the credit group and lender) were worked out using the following formula.

$$\text{Repayment rate (per annum)} = \left[\frac{\text{Amount repaid}}{\text{Credit} + \text{Interest}} \right] \quad (\text{Nirmala, 2006})$$

As a performance measure for income generating activities, the number of income generating activities financed by the group in dairy enterprise per household was calculated.

Composite Performance Index

The method of multistage Principal Component Analysis (PCA) is used to construct indices for each of the four performance indicators and finally, overall composite performance index is constructed. We have already discussed on the four performance indicators (variables/components) and observed that two of the performance variables, i.e., lending and repayment performance comprise two indicators, each. The remaining two performance variables, i.e., saving and income generating activity comprise a single indicator, each. First of all, the index is constructed for each variable. The normalised values of saving performance and income generating activity are treated as indices for them; since, they comprise a single indicator, each. Finally, the overall Composite Performance Index (CPI) is constructed to get a clear picture of the overall performance of the SHGs and to compare the performance across the groups. We have used cumulative square root frequency method on the constructed indices to categorise the SHGs into three groups, viz., poor, average and good for each indicator.

The construction of a composite index to compare the SHGs in terms of their performances has two basic steps: firstly, elimination of bias of scale in indicators and secondly, determination of proper weights to be assigned to different indicators. We have normalised each of the indicators by subtracting the minimum value of the indicator from its actual value and then dividing it by the range, which is the difference between the maximum and minimum value of the selected indicator. Once the bias of scale is removed from the observations, the next difficult task is to assign appropriate weights to the selected indicators. Assignments of arbitrary weights on the basis of independent judgment stands exposed to subjectivity and should be resorted to only as the last option. Therefore, in this analysis, the weights of individual indicators have been assigned on the basis of principal component analysis. The argument here is that it maximises the sum of squares of correlations (of the indicators with the composite index).

Statistical Package for Social Sciences (SPSS) has been used to perform PCA. The steps of PCA are given below:

- PCA is run using SPSS to obtain Factor Loadings and Eigen Values.
- The Initial Eigen Values above one are identified. According to the number of Eigen Values above 1, the same numbers of components are extracted for each variable as shown in rotational component matrix.
- Now, the extracted component matrix is multiplied by the Eigen Values, i.e., the 1st Eigen Value is multiplied with the 1st extracted component column and 2nd Eigen value is multiplied with the 2nd extracted component column, considering only absolute values.
- The values obtained are added in case of each indicator to get weight for that particular indicator. Similarly, weights are obtained for other indicators, too. We get the Grand Total Weight by summing up all the weights.
- The normalised value of each indicator is multiplied with its respective weight. Then sum of each multiplication is divided by the Grand Total Weight to obtain the index. Hence, the formula used to determine the index is

$$I = \frac{\sum_{i=1}^n X_i \left[\sum_{j=1}^n |L_{ij}| E_j \right]}{\sum_{i=1}^n \left[\sum_{j=1}^n |L_{ij}| E_j \right]}$$

Where, I is the index, X_i is the normalised value of i-th indicator, L_{ij} is the factor loading value of the i-th variable on the j-th factor, E_j is the Eigen Value of the j-th factor (NUEPA, 2009).

- Based on the index, so obtained, the SHGs are assigned their ranks. Comparison of the index of a SHG is done with the maximum value of 1 and minimum value of 0.
- By following the above steps, indices are obtained for each set of indicators, viz., Savings (SI), Lending (LI), Repayment (RI) and Income Generating Activity (IGI). Two of the performance indicators, i.e., saving and income generating activity are composed of a single variable; hence, their normalised values are themselves treated as indices.
- PCA is run on these four indices and every index is treated as a variable. The same steps mentioned above are repeated to get the overall Composite Performance Index (CPI). Based on CPIs, the SHGs are ranked, the highest index getting rank one (best performing SHG) and lower index getting the last rank (worst performing SHG). It helps to identify the SHGs that need improvement.

III

RESULTS AND DISCUSSION

Structure of Sample SHGs

SHGs at Fatehabad district were formed under Swarna Jayanti Gram Swarajgar Yojana (SGSY) scheme of District Rural Development Authority (DRDA) and SHGs at Mewat district were formed and monitored by non-governmental organisations (NGOs) under the supervision of Mewat Development Agency (MDA). The study found that there were both, all women groups (group constituted of female members only) and mixed groups (group constituted of both male and female members) in the study area. Out of the total 60 SHGs about 33.33 per cent SHGs were all women groups. All women groups accounted for as high as 53.33 per cent of the total NGO groups whereas it was 13.33 per cent of the total SHGs in case of SHGs under SGSY scheme. The number of SHGs reported as self-selected was 22 in case of SHGs under SGSY scheme whereas only 12 self-selected groups were found under NGOs.

The SHGs were classified into three categories according to their size and age using cumulative square root frequency method and presented in Table 1.

As evident from table that on an average, a SHG consisted of 14 members. The maximum of the SHGs (26 out of 60 SHGs) constituted 10 to 12 members whereas only 15 SHGs were large (16-20 members) in size. The range of age of SHGs was found to be from minimum of 24 months to maximum of 74 months. On an average, a group was in existence for more than 5 years in the study area which implies that the sample dairy SHGs were quite sustainable.

TABLE 1. DISTRIBUTION OF SHGS ACCORDING TO SIZE AND AGE

Size of SHGs (number of members)			(per cent)
Small (10-12) (1)	Medium (13-15) (2)	Large (16-20) (3)	Average size of SHGs (number of members) (4)
43.33	31.67	25.00	13.98
Age of SHGs (months)			
Low (<56)	Middle (56-75)	High (>75)	Average SHG age (months)
45.00	35.00	20.00	61.78

Profile of Sample Households

The member households consisted of family members of 5.90 in the study area. The sex ratio was found to be in favour of males, as the number of female per thousand males was 783 as against the sex ratio of 860 for Haryana state. The average age of SHG members was 33.12 years and age range was found to be 20 to 58 years. The average size of land holding was observed to be 0.62 acre for member households. Education is expected to be a facilitating factor in realising higher performance via better understanding of the mechanism involved in the formation and functioning of SHGs and practicing scientific dairy farming. Majority of the members (59 per cent) were illiterate. Only 10.83 per cent of the members had acquired secondary level of education while none of the respondents had undergone higher secondary education in the study area.

Performance of SHGs

Savings Performance: At the time of inception of the SHGs, group members mutually decide on the amount of saving contribution by each member and frequency of savings per month. The magnitude of saving contribution depends on the group members' capacity to save, size of the group and age of the group. It was observed that all the SHGs planned to save once in a month in the study area. The planned monthly savings per member per month varied from low level of Rs. 50 to a high level of Rs. 100 (Datta and Raman, 2001; Mishra *et al.*, 2001; Nedumaran *et al.*, 2001; Puhazhendi and Badatya, 2002; Kumar, 2005). Majority of the SHGs (48.33 per cent) planned to have saving contribution of Rs. 100 per month per member. Only in 8.34 per cent of the SHGs, group members saved Rs. 75 per month. All the SHGs (51.67 per cent) which initially saved Rs. 50 or Rs. 75 per month per member reported increase in savings contribution over a period. Out of the 26 groups which had planned savings of Rs 50 per month per member; 22 groups later raised their saving contribution to Rs. 100 per month and group members of remaining 4 groups saved Rs. 75 per month. This change in monthly saving contribution implies the

changing economic condition of the members and the flexibility in operation of the SHGs. Mallikarjuna (2004) also reported this type of increase in planned savings by the SHG members in Tamil Nadu. The saving performance of the sample SHGs in the study area presented in Table 2.

TABLE 2. SAVING PERFORMANCE OF SAMPLE SHGS

Particulars (1)	Unit (2)	Performance (3)
(A) Total saving (entire period)/SHG	(Rs.)	50792
(B) Annual saving/SHG	(Rs.)	14501
(C) Annual saving/member	(Rs.)	1050
(D) Total planned saving/SHG	(Rs.)	71348
(E) Actual savings over planned savings	Ratio	0.74

***=P≤0.01 in a two tail test.

On an average, the planned savings of the SHGs in the study area worked out to Rs. 71348 over the years. But we found that the SHGs actually saved on an average Rs. 50792. On an average, a SHG in the study area saved Rs. 14501 per annum. The average saving per member per annum is calculated to Rs. 1050. The ratio of actual savings to total planned savings worked out to 0.74 which implies that the SHGs saved 74 per cent of total committed savings. This finding is in line with the findings (72 per cent) of Verhelle and Berlage (2003). This leakage in savings was the result of deferred savings and non-deposit of monthly savings amount by the group members (Datta and Raman, 2001). At the time of hardship or in the case of organising some family functions or in emergency they have channelised money for purposes other than economical one.

Loaning Performance: A picture of loaning performance of the SHGs is depicted in Table 3.

TABLE 3. LOANING PERFORMANCE OF SAMPLE SHGS

Particulars (1)	Unit (2)	Performance (3)
Internal Loan		
(A) Loan amount/SHG	Rs.	101252
(a) Income generating loan	Per cent	67.87
(b) Non-income generating loan	Per cent	32.13
(B) Loan/member	Rs.	7243
(C) Outreach of internal loan (Per cent of members received loan/SHG)	Per cent	87.80
External Loan		
(A) Loan amount /SHG	Rs. lakh	2.07
(B) Loan over group savings	Ratio	4.34

A SHG, on an average, disbursed internal loan amount of Rs. 1.01 lakh over the period. The distribution of loan portfolio of the SHGs revealed that the income generating loans accounted for 67.87 per cent of the total internal loan and the remaining 32.13 per cent was non-income generating loans. Productive loans included loans for the purpose of dairy farming, achar/papad making, agarbathi/candle making, toy making, etc., whereas non-productive loans included loans for consumption purpose, i.e., household expenditure, repayment of old debt to relatives and friends, expenses for ward's education, medical expenses and meeting expenses for social ceremonies such marriage and other functions.

In the case of multiple applications, the group members discuss on the priority of the needs of the loan applicants at the monthly group meetings. About 88 per cent of the total members availed internal loans across the sample SHGs which implies that the loans were well distributed among the group members, i.e., outreach of the internal loan was quite impressive. This is quite high percentage in comparison to 42 per cent reported by Verhelle and Berlage (2003).

About six months of regular savings and internal lending operations makes the SHGs under SGSY eligible for receiving revolving funds of Rs. 25000 out of which Rs. 10000 subsidy is provided by the District Rural Development Agency (DRDA). After closing of cash credit account, i.e., repayment of revolving funds, the SHGs under SGSY received term loans from banks. This loan from commercial bank or any other financial institution is called external loan. It was observed that it took 6 to 24 months after formation of SHGs to get term loans from banks. This time-period was more for the groups which were formed at the initial stages of the SHG-Bank Linkage Programme.

From the table, it can be observed that the SHGs, on an average, received Rs.2.07 lakh of term loan (external loan) from the banks. On an average, the groups received term loan to the tune of 4.34 times of the group savings which is as per the recommendation of NABARD (4:1). Credit to saving ratio of as high as 6:1 (Verhelle and Berlage, 2003) and as low as 2:1 (Mallikarajuna, 2004) were also reported by researchers.

It was found that 14 out of 60 SHGs availed of external loan more than once. The rate of interest charged by the banks to the SHGs on term loans varied over the period (8.50 to 13.50 per cent per annum) and across different banks. On an average, the SHGs charged 2 per cent interest per month, i.e., 24 per cent per annum, to the group members (Singh *et al.*, 2001).

Repayment Performance: It was observed that the repayment schedules of the external loans varied from 3 to 5 years depending on the magnitude of the loan. In general, the SHGs deposited the first instalment one month after taking loan but banks provided 3 to 4 month gestation period based on mutual understanding. But in case of repayment of internal loans, the repayment schedules varied from 6 to 12 months which is consistent with the principle, i.e., frequent small loans for shorter periods, of microfinance. It is clear from Table 4 that average repayment rate of

external loans was 80.36 per cent that was higher than the average repayment rate of internal loans, i.e., 75.38 per cent (Datta and Raman, 2001; Nedumaran *et al.* 2001; Mishra, 2002; Puhazhendi and Badatya, 2002).

TABLE 4. REPAYMENT PERFORMANCE OF SAMPLE SHGS

Particulars (1)	Percentage (2)
A. Internal repayment rate	75.38
B. External repayment rate	80.36

The average repayment rate of external loans was 80.36 per cent that was higher than the average repayment rate of internal loans, i.e., 75.38 per cent (Datta and Raman, 2001; Nedumaran *et al.* 2001; Mishra, 2002; Puhazhendi and Badatya, 2002). Not the individuals but the group as a whole is responsible for the repayment of external loans to the banks. The banks are stringent on imposing penalty in the case of default; so, the groups are much more committed in repayment of term loans. But the groups show leniency in imposing penalty in the case of default in repayment of internal loans. Group members consider the reasons of default and may agree or disagree to punish the defaulting member by charging the pre-decided amount of penalty in the case of internal loans.

Income Generating Activities: On an average, 2.07 income generating activities were financed by each SHG in the study area. But Verhelle and Berlage (2003) reported only 0.37 activities per SHG in Chhattisgarh. The reason for such a low number of economic activities was that only 31.75 per cent of the sample SHGs undertook one or more than one income generating activities. But in the case of our study, all of the SHGs were engaged, at least, in one income generating activity, i.e., dairy, as it was the criteria for selection of SHGs. The income generating activities along with their frequencies are enlisted in Table 5.

TABLE 5. FREQUENCY OF DIFFERENT ACTIVITIES FINANCED BY SAMPLE SHGS

Sr. No. (1)	Activities (2)	Frequency (3)
1.	Dairy	60
2.	Papad/Achar making	13
3.	Agarbathi/Candle making	11
4.	Agriculture/Horticulture	10
5.	Toy making	9
6.	Rickshaw	5
7.	Cycle repairing store	5
8.	Tea/sweet-snack stall	4
9.	Kirana store	4
10.	Bio-fertiliser (Vermi-compost)	3

*Frequencies include one or more than one activity.

Apart from financing dairy, papad/achar making, agarbathi/candle making and purchase of agricultural inputs were the other income generating activities financed by sample SHGs. Three SHGs financed vermi-compost project in Mewat district, also.

Overall Performance: To assess the overall performance of the sample SHGs in the study area, we have constructed the composite performance index (CPI). CPI nearer to 1 implies good performance and CPI closer to 0 implies bad performance. Finally, the SHGs are ranked on the basis of the CPI (Annexure I) and the SHGs are distributed across performance categories and the relevant data are presented in Table 6.

TABLE 6. FREQUENCY OF SAMPLE SHGS ACCORDING TO COMPOSITE PERFORMANCE INDEX

Performance Category (1)	Frequency (2)	Percentage to total (3)
Poor (<0.464)	14	23.33
Average (0.464 - 0.585)	28	46.67
Good (>0.585)	18	30.33
Overall	60	100

Figures in parentheses indicate range of Composite Performance Index.

It can be observed from the table that out of the total SHGs the maximum proportion of the SHGs are in the average performance category, followed by good performance category and poor performance category. Similarly, 47 per cent of the SHGs reported high performance in a study conducted by Nedumaran *et al.* (2001) in Tamil Nadu. So, it can be said that the 14 SHGs which fell in poor performance category need special attention to keep them going. In regard to the 28 average performing SHGs, it can be concluded that they need simple corrective measures to improve their performance. The remaining 18 good performing SHGs are to be simply monitored so that they do not falter.

IV

CONCLUSIONS

The study was conducted to assess the performance of dairy SHGs in Haryana. The SHG members have saved satisfactory amount of money, though not cent per cent, in relation to planned savings. Internal loans are reported to be well distributed among the SHGs members. The SHGs have received external loans which are in tune with NABARD guidelines. Repayment performances of the SHGs are quite impressive for both internal as well as external loans. It is suggested that banks can follow the group lending mechanism to channelise the priority sector loans and also can easily target the poor section of the society. Each SHG has financed more than a couple of income generating activities. On the basis of the overall composite

performance index, it can be said that maximum proportion of the total SHGs have had average performance. Arrangement of skill training facility for the group members and marketing of the produce of the groups will keep the SHG members interested in the economic activity and improve the overall performance of the groups.

Received January 2010

Revision accepted May 2010.

REFERENCES

- Awasthi, P.K., D. Rathi and V. Sahu (2001), "Working and Impact of Self-Help Groups on Economic Status of Women in Watershed Area of Madhya Pradesh", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 475-476.
- Borbora, S. and R. Mahanta (2001), "Micro-Finance through Self-Help Groups and Its Impact: A Case of RGVN-CSP in Assam", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 449.
- Datta, S.K. and M. Raman (2001), "Can Heterogeneity and Social Cohesion Coexist in Self Help Groups?: An Evidence from Group Lending in Andhra Pradesh", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 387-400.
- Ghosh, S.P. (1991), *Agroclimatic Zone Specific Research: Indian Perspective under NARP*, in D.N. Basu and G.S. Guha (Eds.) (1991), *Agro-Climatic Regional Planning in India: Concepts and Applications*, Vol. I., ICAR Publication, New Delhi, pp. 144-157.
- Karmakar, K.G. (1999), *Rural Credit and Self Help Groups: Micro Finance Needs and Concepts in India*. Sage Publications India Pvt. Ltd., New Delhi.
- Kumar, B. (2005), "Impact of Microfinance through SHG-Bank Linkage in India: A Micro Study", *Vilakshan – XIMB Journal of Management*, Vol. 2, No. 2, pp. 1-22.
- LOGOTRI (2006), *Building Sustainable Finance System: A Catalyst for the Poor*, LOGOTRI Research Study, Society for Development Studies.
- Madheswaran, S. and A. Dharmadhikary (2001), "Empowering Women through Self Help Groups: Lessons from Maharashtra Rural Credit Project", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 427-443.
- Mallikarjuna, I. (2004), "Effectiveness of Women Self Help Groups in Micro Enterprise Development in Rajasthan and Tamil Nadu", Study conducted by Swadesh Jagaran Foundation, National Commission for Women, New Delhi.
- Mishra, J.P., R.R. Verma and V.K. Singh (2001), "Socio-Economic Analysis of Rural Self-Help Groups Scheme in Block Amaniganj, District Faizabad (Uttar Pradesh)", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 473-474.
- Mishra, R.K. (2002), "Self-Help Groups and Micro-Credit Movements in Orissa: Issues and Options", *Indian Cooperative Review*, Vol. 34, No. 3, pp. 347.
- National University of Educational Planning and Administration (NUEPA) (2009), "Educational Development Index (EDI): A Suggestive Framework for Computation, Vol. 2", Department of Educational Management Information System, New Delhi, India.
- Nedumaran, S., K. Palanisami and L.P. Swaminathan (2001), "Performance and Impact of Self Help Groups in Tamil Nadu", *Indian Journal of Agricultural Economics*, Vol. 56, No. 3, July-September, pp. 471-472.
- Nirmala, V. (2006), "The Role of Self Help Groups in Income Generation and Poverty Alleviation in Rural India: A Case Study", International Conference on New Approaches to the Design of Development Policies, 20-21 March, The Arab Planning Institute, Beirut, Lebanon.

- Puhazhendi, V. and K.C. Badatya (2002), "SHG-Bank Linkage Programme - An Impact Assessment", Paper presented at the seminar on SHG-Bank Linkage Programme at New Delhi on 25th and 26th November 2002.
- Shylendra, H.S. (1999), Micro-finance and Self Help Groups (SHGs): A Study of the Experience of Two Leading NGOs, SEVA and AKRSP in Gujarat (India), Research Paper 16, Institute of Rural Management, Anand.
- Singh, V.K., R.K. Khatkar and S.K. Kharinta (2001), "A Study on the Working and Impact of Rural Self-Help Groups in Hisar Districts of Haryana", *Indian Journal of Agricultural Economics*, Vol. 56, No.3, July-September, pp. 482-483.
- Verhelle, C. and L. Berlage (2003), *Determinants of Microfinance Group Performance: An Empirical Analysis of Self Help Groups in India*, Department of Economics, Katholic University Leuven, Belgium.

ANNEXURE I
CONSTRUCTED PERFORMANCE INDICES AND RANKS OF SHGS

Sr. No. (1)	SHG Model (2)	Saving		Lending		Repayment		IGA		Composite	
		SI (3)	Rank (4)	LI (5)	Rank (6)	RI (7)	Rank (8)	IGAI (9)	Rank (10)	CPI (11)	Rank (12)
1.	SGSY	0.52	29	0.26	52	0.30	56	1	1	0.60	15
2.	SGSY	0.58	22	0.51	27	0.35	51	0.5	12	0.49	42
3.	SGSY	0.00	60	0.67	6	0.00	60	1	1	0.53	31
4.	SGSY	0.36	43	0.53	23	0.35	50	0.5	12	0.45	48
5.	SGSY	0.29	49	0.36	41	0.54	39	0.5	12	0.43	51
6.	SGSY	0.26	52	0.64	10	0.47	43	0.5	12	0.47	45
7.	SGSY	0.35	44	0.29	47	0.85	19	1	1	0.67	5
8.	SGSY	0.37	40	0.62	15	0.46	44	0.5	12	0.49	43
9.	SGSY	0.24	56	0.27	50	0.40	47	1	1	0.56	22
10.	SGSY	0.31	46	0.20	59	0.66	34	0.5	12	0.42	54
11.	SGSY	0.53	28	0.24	56	0.74	28	0.5	12	0.49	41
12.	SGSY	0.70	11	0.62	12	0.38	49	0.5	12	0.55	28
13.	SGSY	0.54	27	0.57	19	1.00	1	0	54	0.43	52
14.	SGSY	0.26	53	0.26	53	0.41	46	0.5	12	0.38	57
15.	SGSY	0.37	42	0.24	54	0.57	36	0.5	12	0.43	53
16.	SGSY	0.60	20	0.62	14	0.31	55	0.5	12	0.51	37
17.	SGSY	0.69	13	0.61	16	0.28	57	0.5	12	0.53	32
18.	SGSY	0.47	35	0.60	17	0.68	31	0.5	12	0.55	29
19.	SGSY	0.52	30	0.83	1	0.54	38	0	54	0.40	55
20.	SGSY	0.64	16	0.35	43	0.39	48	0.5	12	0.48	44
21.	SGSY	0.65	15	0.62	13	0.34	53	0	54	0.34	58
22.	SGSY	0.58	21	0.23	57	0.81	23	0.5	12	0.51	38
23.	SGSY	1.00	1	0.68	4	0.35	52	0	54	0.43	50
24.	SGSY	0.62	18	0.76	2	0.76	26	0.5	12	0.63	11

(Contd.)

ANNEXURE I (CONCLD.)

Sr. No. (1)	SHG Model (2)	Saving		Lending		Repayment		IGA		Composite	
		SI (3)	Rank (4)	LI (5)	Rank (6)	RI (7)	Rank (8)	IGAI (9)	Rank (10)	CPI (11)	Rank (12)
25.	SGSY	0.33	45	0.52	26	0.31	54	0	54	0.24	59
26.	SGSY	0.25	55	0.66	8	0.25	58	0.5	12	0.44	49
27.	SGSY	0.37	39	0.18	60	0.46	45	0	54	0.20	60
28.	SGSY	0.63	17	0.67	7	0.23	59	0.5	12	0.52	36
29.	SGSY	0.27	51	0.36	40	0.53	41	1	1	0.61	14
30.	SGSY	0.57	24	0.54	22	0.47	42	0.5	12	0.52	35
31.	NGO	0.47	34	0.22	58	1.00	1	1	1	0.71	3
32.	NGO	0.73	8	0.28	48	0.93	10	0.5	12	0.58	19
33.	NGO	0.70	10	0.27	51	1.00	1	1	1	0.77	1
34.	NGO	0.97	2	0.44	35	0.84	22	0.5	12	0.65	7
35.	NGO	0.77	4	0.52	25	0.89	16	0.5	12	0.63	9
36.	NGO	0.51	31	0.30	45	0.85	20	0.5	12	0.52	34
37.	NGO	0.11	57	0.30	46	0.90	15	1	1	0.63	10
38.	NGO	0.40	38	0.44	34	1.00	1	0.5	12	0.56	26
39.	NGO	0.55	26	0.31	44	1.00	1	0.5	12	0.56	25
40.	NGO	0.25	54	0.41	36	0.57	37	1	1	0.63	12
41.	NGO	0.48	33	0.63	11	0.71	29	0.5	12	0.56	23
42.	NGO	0.73	7	0.38	37	0.54	40	1	1	0.72	2
43.	NGO	0.44	36	0.51	28	0.69	30	0.5	12	0.52	33
44.	NGO	0.44	37	0.74	3	0.67	33	0.5	12	0.57	20
45.	NGO	0.57	25	0.56	21	1.00	1	0.5	12	0.62	13
46.	NGO	0.77	5	0.68	5	0.92	11	0.5	12	0.68	4
47.	NGO	0.72	9	0.45	32	0.80	25	0.5	12	0.59	17
48.	NGO	0.27	50	0.56	20	0.75	27	0.5	12	0.51	40
49.	NGO	0.66	14	0.49	30	0.65	35	0.5	12	0.56	24
50.	NGO	0.02	58	0.65	9	0.67	32	0.5	12	0.46	47
51.	NGO	0.29	47	0.28	49	0.86	18	0.5	12	0.47	46
52.	NGO	0.01	59	0.24	55	0.91	14	1	1	0.60	16
53.	NGO	0.57	23	0.44	33	0.87	17	0	54	0.38	56
54.	NGO	0.78	3	0.50	29	0.91	13	0.5	12	0.64	8
55.	NGO	0.69	12	0.37	39	0.92	12	0.5	12	0.59	18
56.	NGO	0.37	41	0.59	18	0.84	21	0.5	12	0.55	27
57.	NGO	0.50	32	0.46	31	0.80	24	0.5	12	0.55	30
58.	NGO	0.60	19	0.35	42	0.94	9	0.5	12	0.57	21
59.	NGO	0.76	6	0.53	24	1.00	1	0.5	12	0.66	6
60.	NGO	0.29	48	0.38	38	0.97	8	0.5	12	0.51	39