Factors Discriminating the Effectiveness of Women's Joint Liability Groups in Agriculture: Evidences from Kerala.

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ABSTRACT

A study was conducted among womens groups involved in the collective farming under Kerala State Poverty Eradication Mission (Kudumbasree mission) of Kerala in order to assess the perceived effectiveness of collective farming in terms of resource, technology, extension, marketing and capacity building. Considerable improvement was observed in all the components studied, indicating that group mobilization have potential to overcome the multiple constraints faced by small farmers at individual level. Major factors influencing the effectiveness of farming groups were found to be level of education, social participation, economic motivation, Group dynamics, Functional Linkage and support from the promoting institution

Keywords: *Collective farming; Effectiveness,; Kudumbasree; Joint Liability Groups;*

Collective action is direct actions carried out by groups of people working toward common goals. Most definitions of collective action have in common several basic features: the involvement of a group of people, a shared interest, and some common action. *Agarwal (2010)* has pointed out that, where small and marginal farmers predominate, there could be gains in productivity as well as bargaining power in acting jointly rather than individually. This is likely to be even more the case with women farmers. It was observed that collective action can enable women to access directly markets and services to improve their livelihoods. The farmer groups as a form of collective action can help smallholders to reduce barriers to the entry into markets by not only lowering the transactions costs for their market exchanges, but also by improving their bargaining power.

Collective farming by women groups was initiated by Kerala State Poverty Eradcication Mission (Kudumbasree) as strategy to enhance the livelihood options of women from small and marginal back grounds as well as to contribute to the food security of the state. Kudumbasree is a Self Help Group (SHG) based women oriented initiative launched in 1998 by the State Government with the active support of Government of India and NABARD. The lower most tier of Kudumbasree constitutes the SHGs consisting of 10-20 women members selected from the poor families.

SHGs under Kudumbashree are known by the name 'Ayalkoottam' (Neighbourhood Groups).Kudumbasree is one of the largest women's movement in Asia with 3.8 million members in 0.2 million SHGs (*Kudumbasree, 2010*). Since inception, Kudumbasree has promoted farming and other allied activities for income generation of SHG members. Many special projects on agriculture have also been implemented by the mission in collaboration with local self governing bodies and other governmental agencies. Collective Farming is an initiative introduced by Kudumbashree to encourage cultivation by neighbourhood groups. Joint liability groups (JLGs) of women farmers were formed under the collective farming initiative Presntly, there are 2,25,200 women cultivators in 46444 groups were cultivating various crops like paddy, banana, tapioca and vegetables in 25062 hectare (*Kudumbasree, 2010*).

METHODOLOGY

The study was conducted in Thiruvanathapuram districts of Kerala. The units of analysis of the study were exclusive women groups under Kudumbasree programme involved in collective farming activities. From the district fifty groups were selected following a multi stage random sampling procedure. The Personal interview with structured questionnaire was used for collection of primary data.

To assess the perceived effectiveness of women groups in agriculture, before-and-after research design was used and effectiveness was assessed for both the periods by using effectiveness index. In before-and-after design, effect of the treatment (*JLG formation*) would be equal to the level of the phenomenon after the treatment minus level of the phenomenon before treatment (Kothari, 2004) The effectiveness index was developed for the study based on five components which were selected based on literature review and expert opinion and are discussed below.

(i)   *Resource mobilization:* resource mobilization was opertionalised as the extent to which various resources like credit, inputs and animals were available to the respondent

(ii) *Extension orientation:* Extension orientation was operationalised as the extent to which the respondent was aware of various extension programmes, access to and availability of public and private extension services and participation in extension activities.

(iii) *Marketing effectiveness:* Marketing effectiveness refers to respondents' perception about availability of market information, presence of intermediaries, collective marketing facilities, bargaining power of producers, transparency in marketing operation and marketing transaction cost

(iv) *Capacity building:* Capacity building was operationalised as the extent to which respondent have knowledge and skill to undertake diversified activities, to diagnose and solve the problems and to learn and use innovations.

In case of the four components mentioned above, respondents were categorized into following categories based on their responses; i.e. Nil (0), Low (1), Medium (2) and High (3).

(v)   *Technology adoption:* Technology adoption was operationalised as the extent to which the respondent has adopted various dairy technologies. Adoption of dairy technologies by the respondent was measured on a nominal scale based on the responses; i.e. Yes (1) and No (0).

For each of these components separate Effectiveness Indext (EI) was calculated as follows for both periods:

$$EI = \frac{\text{Actual score obtained for that component}}{\text{Maximum possible score for that component}} \times 100$$

Combined effectiveness index was also calculated for both the periods by taking equel weight for all the sub components viz. resource mobilization, technology adoption, extension orientation, marketing effectiveness and capacity development.

Discriminant function analysis (DFA) was used to find out the factors which discriminate the collective farming groups as less effective and more effective. Discriminant function analysis (DFA) is a statistical technique to study difference between two or more groups with respect to many variables at the same time (Klecka,1980). The women's farming groups were classified into two classes of almost equal number based on the value of the combined effectiveness index (high and low) and coded as 1 and 2. Socio economic and psychological variables considered for analysis include age, education, annual income, land holding, livestock holding, social status, social participation, economic motivation, support from promoting institution (Kudumbasree), group dynamics, functional linkage, credit availed, self reliance and risk taking ability. A linear discriminant equation, $D = v_1X_1 + v_2X_2 + v_3X_3 + \ldots + v_iX_i + a$, is constructed such that the two groups differ as much as possible on D.

Where

D = combined effectiveness index after group mobilization.

X = respondent's score for the socio economic and psychological variable as discussed above

v = the discriminant coefficient or weight for that variable

a = a constant

i = the number of predictor variables.

Those variables with the largest standardized discriminant coefficients are the ones that contribute most to effectiveness of SHGs.

RESULTS AND DISCUSSION

Effectiveness of Women's Joint Liability Groups in Agriculture: Perceived effectiveness of collective farming groups was studied using a before and after research design. Five components were identified and improvement in these components was analysed and mean score for all the components was presented in Table 1. The results of the paired t-test showed that difference in the mean score for all the components of effectiveness index were statistically significant at 1% level of significant. There was considerable difference

Table 1: Mean score obtained by JLG members on the components of effectiveness index.

Components of effectiveness index	Score		Paired diff.	t- value
	before	after		
Resource mobilization	28.15	66.67	38.52	11.3089
Extension orientation	15	53.33	38.33	3.1438
Marketing effectiveness	24.94	43.7	18.76	3.8973
Technology adoption	22	69.6	47.6	5.32984
Capacity building	28.15	66.67	38.52	11.3089

between the mean score of components in both the periods. This observation is in line with findings of various studies on collective action (*Adenew, B. and Abadi, Z. (2011); Fischer and Quaim (2010)*) like capacity-building, facilitated access to technology, access to extension services providers, access to resources including knowledge, access to storage facilities, access to technical expertise and market knowledge, access to finance(pooling resources as a group to finance operations or acquire credit), reduced marketing costs(organising to transport produce, sharing processing facilities to add value), improved coordination, increased bargaining power, access to new markets like supermarkets and food chains, and building of social capital (networks for information diffusion and social learning).

Access to resources like land, inputs and credit has considerably improved after the initiation of collective farming. Sore for resource mobilization component has increased from 28.15 to 66.67 due to collective farming intervention. Access to land is the greatest limitation for the poor women (*Knanna, 2012*). Group members were able to access land on lease with the help of Kudumbasree personnel and office bearers of gram panchayats. Access to credit, an important bottleneck for small and marginal farmers, was facilitated by group saving and support of the mission. Under the collective farming initiative of Kudumbasree mission, Primary Agricultural Cooperative Societies (PACS) provide interest free loans for selected crops and play an important role in the farming by these women groups. Nationalised banks and some private banks provide crop loan for the group at 7 per cent. Out of this 7 per cent, 5 percent is provided as interest subsidy from Kudumbashree and hence the group gets the loan at a low interest rate. Access to credit has improved the timely access to inputs also. Reduction of input transaction cost due to economy of scale achieved in

purchase and transportation of inputs has also contributed to the effectiveness of collective farming groups in resource mobilization front. The pooling of human resource has helped them to overcome the problems of labour shortage and better supervision of the enterprise. Indian agriculture is experiencing shortage of labour in rural farms, a phenomenon which was highly unlikely in the Indian context till recently (*Alha and Yonzon,2011*). *Agarwal (2010)* has pointed out that group based agriculture helps facilitate labour sharing and easy substitution for a member who is temporarily unable to work due to illness or other exigencies . Group effectiveness was also visualised in the better management of the enterprise compared to individual farmers.

Awareness about extension programmes and access to extension service have been improved in case of all the groups studied. Activities of Department of Agriculture were integrated with the collective farming initiative of Kerala. Group members were provided with seeds, and financial incentives through decentralised offices of agricultural department, called as 'KrishiBhavans'. Facilitation by network of women's groups and thier federations has improved the information dissemination, especially on new programmes and other activities. It was also observed that access to advisory service from public extension system is still constrained by operational limitations of public extension system. Though there was increase in the number of visits by group members to Agricultural Offices, purpose of visit was mainly for accessing inputs and financial assistance rather than for seeking crop production and protection information. Field visits by extension personnel have also not increased to satisfactory level. Dependence on input dealers for plant protection advice is still continuing in the case of many JLGs.

It was observed that group mobilization has not improved the marketing effectiveness to a markable level in the case of crop production. Under collective farming initiative, Kudumbasree mission has provided financial and technical assistance of crop production, but marketing assistance is restricted to organization of seasonal fairs only. Since the collective marketing facilities not in operation, JLG members were marketing their produces individually. This is an area where promoting institution (Kudumbasree) have to improve their presence. Women smallholders would benefit from collective action in marketing, particularly concerted efforts to increase their market knowledge in order to

be better able to identify niche markets, develop new products and obtain better prices for their produce *(Pionetti et al., 2011)*

There was noticeable improvement in the awareness about and adoption of technologies. But level of adoption is still lower compared to improvement in the awareness about technology. Though all the JLG members were aware of the High Yielding Varieties, rate of adoption was found to depend on the provision of seeds/planting material by promoting institution or agricultural department.

SHG members were provided number of trainings on different aspects of farming by respective SHPIs as well as various other agencies like Agricultural Technology Management Agency (ATMA). All the SHG members have perceived considerable improvement in their skill and competency to carry out the enterprisess they have undertaken. Apart from the trainings they have received field level experiences and the group efficacy has also contributed to development of their capacities. Participation in the activities, from planning to marketing, has given the confidence to continue farming as the means of their livelihood. Even then many of the SHG members have expressed the need for more skill based trainings especially in the areas of value addition, pest and disease diagnosis, diversified farm activities like ornamental fisheries, poutry, use of small scale machineries like weed cutter etc.

Discriminating Factors of group effectiveness:
Discriminant function analysis was carried out to find out the factors which discriminate the collective farming groups as high and low effective with respect to their effectiveness in terms of resources, technology, extension, marketing and capacity development. Respondents were classified into two groups (High and Low) based on their perceived effectiveness score. Appropriateness of this classification was verified using classification table results. The classification results revealed that 96% of original grouped cases correctly classified and 88% of cross validated groups are correctly classified (Cross validation is the process of testing a model on more than one sample to assess the reliability and generalizability of the findings. In cross validation, each case is classified by the functions derived from all cases other than that case. The cross validated set of data is a more honest presentation of the power of the discriminant function than that provided by the original classifications).

Table2: Classification results of discriminant function analysis.

		EI	Predicted Group Membership		
			High	Low	Total
Original	Count	High	24	1	25
		Low	1	24	25
	%	High	96	4	100
		Low	4	96	100
Cross-validateda	Count	High	22	3	25
		Low	3	22	25
	%	High	88	12	100
		Low	12	88	100

The major factors discriminating the groups based on their effectiveness as revealed by the result of the analysis were level of education, social participation, economic motivation, group dynamics and support from Kudumbasree mission. *Sukhdeep Kaur Mann et al., (2011)* also have pointed out that the women self help group's performance, to a large extent, is dependent on the promoting agency in the initial stages and in the long run on the resources that its members generate and accumulate for the group.

Table 3: Results of discriminant function analysis of factors affecting effectiveness of collective farming

Socio-economic characterestics	Discriminant function coefficient	Significance
Age	0.537	0.074
Education	0.285	0.056
Annual Income	1.213	0.757
Land Holding	1.264	0.462
Social Status	0.760	0.105
Social Participation	1.872*	0.019
Information seeking behaviour	0.507	0.324
Economic Motivation	0.586**	0.019
Group dynamics	1.006**	0.000
Support of Kudumbasree	0.835*	0.000
Functional Linkage	0.189**	0.032
Risk Taking Ability	0.474	0.002
Self Reliance	0.500	0.569
Credit availed	0.011	0.062

*Significant at the 0.05 level of the probability.
**Significant at the 0.01 level of the probability.

It can be inferred that groups with members who were better educated and having more participation in formal organizatons were able to mobilize the resources

and demand for extension services. They were able to better understand the technologies and practices and adopted it. Economic motivation of the group memebrs has contributed to the effectiveness through their urge to maximize the gains for improvement in their economic condition and standard of living. Group dynamics effectiveness in terms of participation of members, democratic approach and group cohesion is important to harness the potential of group mobilization. The results have shown that groups with higher group dynamic effectiveness were more effective in terms of resources, technology, extension, marketing and capacity building. Efforts of Kudumbasree mission were instrumental in group mobilization as well as forging their linkages with key stake holders. Convergence of various schemes and activities of line department with Kudumbasree mission have significantly related to the support received by the groups.

CONCLUSION

The assessment of effectiveness of women's joint liability groups involved in collective farming in Thiruvananthapuram district of Kerala revealed that farming groups could prove considerable effectiveness in terms of resource, technology, extension, marketing and capacity building. Scope for further improvement still exists. It was also observed that coordination with other agencies and institutions like co-operative banks, line departments as well as convergence with various programmes of central and state governments played an important role in realizing the potential of group mobilization. Role of concerned promoting instituion (Kudumbasree mission) was found to be instrumental in enhancing the performance of the groups. Group mobilization and collective action in agriculture has the potential to address the multiple constraints faced by small, marginal, women and tenant farmers. So, it is pertinent to pay attention to the factors affecting effectiveness of collective action in agriculture to promote growth as well as equality in agriculture.

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