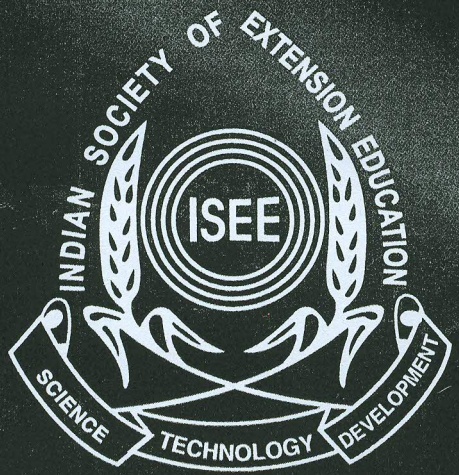
IMPACT ASSESSMENT STUDIES

AGRICULTURAL EXTENSION AND RURAL DEVELOPMENT PROGRAMMES



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Seminar Papers:
National Seminar on
Extension Methodological Issues in Impact Assessment
of Agricultural and Rural Development Programmes
(January 21-23, 2005)

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IMPACT OF MUSSEL FARMING BY THE SELF HELP GROUPS OF FISHERFOLK: A CASE STUDY

Vipinkumar.V.P

Introduction

Rational utilization of common property resources for sustainable development without endangering the environment is possible through community participation. Mussel farming offers good scope for development in our open waters for enhancing food and livelihood security of the stakeholders in our coastal agro climatic zones. Mussel farming has already been proved as one of the profitable enterprises in the coastal belts as a subsidiary income-deriving source of rural fishermen community. The experimental trials conducted by CMFRI have proved the techno-economic feasibility of mussel farming. (Asokan *et. al,* 2001 and Vipinkumar *et al,* 2001)

A Self Help Group (SHG) consists of members linked by a common bond like caste, sub-caste, community, place of origin, activity etc. The group dynamics of these SHGs refer to the interaction of forces between the members. It is the internal nature of the groups as to how they are formed, what their structures and processes are, how they function and affect the individual members and the organization (Lewin *et al.*1960). Pfeiffer and Jones (1972) identified the group dynamics factors as to how the group is organised, the manner in which the group is led, the amount of training in membership and leadership skills, the tasks given to the groups, its prior history of success or failure etc. Hersey and Blanchard (1995) emphasised on helping and hindering roles individuals play in groups such as establishing, aggressive, persuading, manipulative, committing, dependent, attending and avoidance.

The Self Help Groups provide the benefits of economies of scale in certain areas of production process by undertaking common action programmes like cost effective credit delivery system, generating a forum for collective learning with rural people, promoting democratic culture, fostering an entrepreneurial culture, providing a firm base for dialogue and co-operation in programmes with other institutions, possessing credibility and power to ensure participation and helping to assess the individual member's management capacity (Fernandez, 1995).

Methodology

SHGs of fisherfolk were mobilised in *Karwar* and *Bhatkal* locations of Karnataka coastal belts. Three SHGs of 15 members each comprising a total of 45 were mobilised in Majali (Open Sea) of Dhandebag and three SHGs of 15 members each comprising a total of 45 were mobilised in Sunkeri of Kali estuary in Karwar coastal belts in Uttar Kannada district of Karnataka state. Training and demonstration on mussel farming was undertaken in these SHGs. Initially, two training and demonstration programmes in these two sites in Karwar were undertaken, one for *raft culture* in open sea in *Majali* of *Dandebag* and one for *rack culture* in *Sunkeri* of *Kali* estuary. The training was imparted to 45 members of three SHGs, each possessing 15 members in 2 sites separately comprising a total of 90 participants. At *Majali* in open sea, a 5 x 5 metre raft and at *Sunkeri* of Kali esturay, a 5 x 5 metre rack were constructed for mussel farming.

Similarly in *Mundalli* river of *Bhatkal* estuary in Karnataka, 4 Self Help Groups of 15 members each exclusively of women fisherfolk mobilised under the NGO, ' Snehakunja ' comprising a total of 60 participants were trained on mussel farming. They initiated a trial in 5 x 6 metre rack mussel culture by long line method.

The sample design for observation including the number of SHGs' trained, beneficiaries and method of culture is given in Table 1.

Table 1: Mussel culture interventions in Karnataka state

Site	No. of SHGs Trained	No. of beneficiaries	Method of culture	Size of the rack / raft
Sunkeri of Kali estuary	3	45	Rack culture	5 x 5 m
Majali of Dhandebag	3	45	Raft culture	5 x 5 m
Bhatkal of Mundalli estuary	4	60	Raft culture	5 x 6 m

For the present study in analysing the effectiveness of group dynamics of these 10 selected SHGs engaged in mussel farming in coastal belts of Karnataka state, 12 dimensions are identified as participation, influence, styles of influence, decision making procedures, task functions, maintenance functions, group atmosphere, membership, feelings and norms (Vipinkumar and Baldeo Singh, 1998).

Data were gathered from these 10 Self Help Groups as explorative case studies through personal interviews of the respondents. For the study, the Group Dynamics of members of Self Help Groups was measured by developing an index called Group Dynamics Effectiveness Index (GDEI). Group Dynamics Effectiveness was operationally defined for the study as the sum-total of the forces among the member of SHG based on the sub-dimensions, such as participation, influence & styles of influence, decision

ing procedures, task functions, maintenance functions, group
catiosphere, membership, feelings, norms, empathy, interpersonal trust and
isingevements of SHG. (Vipinkumar, 1998).

1 thre These sub-dimensions were subjected to relevancy rating by a
ised iple of scientists and extension personnel to ascertain whether all the sub-
trict ensions are equally applicable to the GDE or not. The relevancy rating
g waaled that all the sub-dimensions were relevant in the case of Group
tratiamics Effectiveness.

or *raj* The judges were further requested to assign weightage for each sub-
ture iension in the range of 0 to 100, based on the importance they attached to
f thresh sub-dimension in such a manner as to get a total of 100 for all the
a totantified relevant sub-dimensions. They were asked to consider the
keri oportance of each sub-dimension in relation to Group Dynamics
ectiveness while assigning the weightage to each sub-dimension. The
4 Selres obtained by a particular sub-dimension were added up and was
erfolkided by the number of judges to arrive at the weightage for a particular
f 60-dimension. This procedure was carried out in case of all the identified
5 x 6evant sub-dimensions. These sub-dimensions along with their weightages
s obtained are furnished in Table 2.

HGs' **ble 2. Dimensions of Group Dynamics Effectiveness and weightages**

mensions	Weightage
rticipation	1.0
fluence & style of influence	0.9
cision making procedures	0.8
sk Functions	0.8
aintenance Functions	0.8
roup Atmosphere	0.9
embership	0.7
elings	0.7
orms	0.7
mpathy	0.8
nterpersonal Trust	0.8
chievements of SHG	1.1
Total	**10.0**

The actual score for each sub-dimension was obtained by Scale Product method i.e., By multiplying its raw score by its weightage. The total score of GDEI for an individual was obtained by adding the individual scores of each component together. For the measurement of the first nine sub-dimensions, the procedure followed by Pfeiffer and Jones (1972) with modifications was used and for the last three sub-dimensions separate schedules were developed.

For the computation of the Group Dynamics Effectiveness Index (GDEI) the scores obtained for each of the above mentioned sub-dimensions

were first made uniform and then multiplied by the corresponding weightage assigned to each as given in Table 2. These scores were then added up to get the GDEI score of each respondent.

It was also ensured that all the sub-dimensions identified as components of GDE were of high significance on the basis of the coefficient of agreement in judges rating as well as the statistical evidence from the results of the pilot study. The measurement device developed for the dependent variable *i.e.*, GDE was ascertained for its content validity.

Measurement of sub-dimensions

A. Participation : For the present study, participation was operationally defined as the degree to which the farmer is involved in group meetings, discussions and group activities of SHG.

B. Influence & style of influence : Influence was operationally defined as the degree to which a farmer can influence other member of SHG in a desirable way. Style of influence was operationalised as the manner in which the member attempts to influence other members of SHG. The four different styles included were autocratic style, peacemaker style, laissez-faire style and democratic style.

C. Decision making procedures : This is operationally defined as the degree to which farmer makes a decision with involvement of other group member of SHG, makes decisions without topic drifting, supports other members' decisions in consensus, feels the majority's decisions valid in the SHG, attempts to get all members participate in decisions of SHG and feels the gains of recognition for his contribution in decision making process.

D. Task functions: This is operationalised as the degree to which the farmer makes suggestions to tackle a problem in the SHG, summarises what has been covered in the group, tries to give or ask for facts, ideas, opinions, feelings, feed back etc. and keeps the group on target.

E. Maintenance functions: This is operationalised as the extent to which farmer helps others into group activities of SHG, helps/interrupts him in group discussions, feels the other members are co-operative and listening, perceives other members help in clarifying the ideas of all members, feels good or bad when ideas are accepted or rejected and the extent to which other members attempt to maintain task functions of SHG.

F. Group atmosphere: This is operationalised as the extent to which the group member prefers friendly congenial atmosphere in the SHG, attempts to suppress conflict or unpleasant feelings in the group, feels other members are involved and interested and feels satisfied from the work climate.

G. Membership: This is operationally defined as the degree to which a group member feels accepted or included in the SHG, feels sub-grouping in the SHG and feels himself or other members to be outside the group.

H. Feelings: This is operationally defined as the degree to which the farmer feels anger/irritation, frustration, warmth, affection, excitement/boredom and competitiveness while performing the group activities of SHG.

I. Norms: This is operationalised as the extent to which the farmer feels the standards or ground rules and regulations are in operation that controls the behaviour of group members for the smooth functioning of the SHG.

J. Empathy: This is operationally defined as the degree to which the respondent is able to make out other person's feelings and thereby to understand it as he feels.

K. Interpersonal trust: This is operationally defined as the degree to which the respondent trusts the other members of the group as well as the faith other members have in him as perceived by the respondent.

L. Achievements of SHG: This is operationalised as the level of performance of SHG as perceived by the farmer as well as the performance of the farmer himself as the group member.

All these sub-dimensions were measured by a set of inventories containing appropriate questions arranged in a three-point continuum of always, sometimes and never with scoring pattern 2,1 and 0 for positive and *vice versa* for negative questions.

The growth parameters were monitored every week in all the sites and the yield particulars of mussel during harvesting in each SHG was also noted.

Results and Discussion

The scores of Group Dynamics Effectiveness Index obtained for different SHGs were computed and shown in Table 3. The corresponding yield obtained for each SHG are also shown in the same table.

Table 3: Group Dynamics Effectiveness of the selected Self Help Groups

Samples selected (Self Help Groups)	Group Dynamics Effectiveness Index (GDEI)	Mussel Yield in Kg / metre length of the rope
Majali of Dhandebag		
SHG 1	53.71	9.2
SHG 2	52.31	9.1
SHG 3	51.91	8.9
Sunkeri of Kali estuary		
SHG 4	57.32	12.6
SHG 5	56.68	12.7
SHG 6	57.14	12.5
Mundalli of Bhatkal		
SHG 7	60.01	13.6
SHG 8	59.98	13.1
SHG 9	61.29	13.8
SHG 10	60.02	13.2

The analysis of variance of GDEI revealed a significant variation in Group Dynamics Effectiveness among different respondents and different groups. Group Dynamics is a multivariate phenomenon influenced by a variety of interacting factors those interplay in varying strengths.

The study, focused attention on Group Dynamics Effectiveness as a trait of Self Help Groups resulted by the joint influence of individual members of the group generated out of skills and orientations from the past life experiences. It definitely varies from person to person, place to place, time to time, situation to situation and in turn from group to group. This might be the probable reason for the differential degree of GDEI observed among respondents. Since the operations of cultivation aspects have to be accomplished with full co-operation and co-ordination of all the members of Self Help Group it brought about adequate group interaction among the members and thereby majority of respondents possessed good GDEI score. This is the possible explanation, for majority of farmers in higher category of GDEI.

Influence of Sub-dimensions of Group Dynamics Effectiveness on GDEI

The relationship of sub-dimensions of Group Dynamics Effectiveness with GDEI was established in this study first by simple correlation analysis (Table 4).

Table 4. Simple correlation analysis of sub-dimensions of Group Dynamics Effectiveness with GDEI (N=150)

Characteristic	Correlation coefficient (r)
Participation	0.947**
Influence and Styles of influence	0.938**
Decision making procedures	0.919**
Task functions	0.907**
Maintenance functions	0.913**
Group atmosphere	0.949**
Membership	0.874**
Feelings	0.879**
Norms	0.884**
Empathy	0.869**
Interpersonal trust	0.918**
Achievements of SHG	0.945**

*** Significant at 1% level of significance*

A perusal of the Table 4 indicated that all the twelve sub-dimensions were positively and significantly related with GDEI. The degree

of relationship was maximum in the case of group atmosphere followed by participation, achievements of SHG, influence and styles of influence, decision making procedures, interpersonal trust, maintenance functions, task functions, norms, feelings, membership and empathy respectively.

The major expenditure required for mussel farming is for the materials such as bamboo, nylon rope, coir, cloth, seed, etc. and labour costs essentially for construction, seeding, harvesting etc. The SHGs' of *Majali* and *Sunkeri* were mobilized by the project team of CMFRI and the SHG's of *Bhatkal* were mobilized by a NGO namely *Snehakunja*. The first two trials and demonstrations were under the funding of CMFRI and for the last one, only the technical helps during the training and demonstration were offered by CMFRI. The Yield particulars in all the ten SHG's was noted and found as substantially good which proves the profitability of mussel farming in the subsequent trials because the material costs such as those of bamboo, rope, cloth and labour cost in construction etc. are negligible, this ensures reasonable profit as a major consequence of adoption of Mussel farming enterprise bringing about economic empowerment of rural women through organised Self Help Groups.

The yield in Kg per metre length of the rope recorded in all SHGs' as Average yield showed a positive relationship with GDEI score. The correlation (r=0.958139) as found significant owing to the 't' value 9.465624 at 1% level of significance (Table-5).

Experiences and observations already indicated that for a group to be developed as an SHG, it requires a period of at least 36 months and it is a hectic process. It has to pass through various phases such as Formation phase, Stabilisation phase and Self Helping phase. These Self Help Groups promote a cooperative and participative culture among the members, which ensures the empowerment culture of the Self Helping phase.

Table 5 : Correlation of the GDEI of SHGs' and Yield

SHG	Yield in Kg / m	GDEI score	Correlation Coefficient (r)	't' value
SHG 1	9.2	53.71	0.958139	**9.4656248****
SHG 2	9.1	52.31		
SHG 3	8.9	51.91		
SHG 4	12.6	57.32		
SHG 5	12.7	56.68		
SHG 6	12.5	57.14		
SHG 7	13.6	60.01		
SHG 8	13.1	59.98		
SHG 9	13.8	61.29		
SHG 10	13.2	60.02		

** 1% level of significance

The utilization of fund sources, accounts maintenance etc. are all perfectly accomplished with proper maintenance of the documented records by the group members. This ascertains the fulfillment of norms and standards of the SHG leading to economic empowerment of the members.

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Constraints faced by the fisherfolk in mussel farming

Mussel farming faces a number of impediments like water salinity, seed availability, selection of location / site, climatic vagaries, identification of proper beneficiaries and proper monitoring opportunities. The major problems and constraints faced by the fisherfolk in mussel cultivation are as follows

- Unpredictable seed availability.
- Mortality of seeds during transportation.
- Reduced growth during certain years.
- Meat shucking problems.
- Marketing of mussels.
- Social constraints like caste splits, conflicts, politics etc. to a limited extent.

The open sea mussel culture in this particular case met with the impediment of unfortunate sabotage of the seeded mussel by some miscreants. It was rectified by reseeding, but the yield was not that much conspicuous compared to the trials undertaken in estuaries. All the SHG members are of unanimous opinion that the government agencies should come forward with improved marketing facilities, as marketing of the mussel was perceived as one of the biggest constraints. Provision of loans with reduced interest rates and freezer facility for storage of harvested mussels can bring about a breakthrough in this sector in the near future.

Conclusion

An attempt has been made to assess the impact of mussel farming by mobilizing Self Help Groups in Karnataka coastal belts. Mussel farming is slowly achieving considerable significance because of its profitability.

But it inevitable to take care in the selection of suitable sites fulfilling the essential parameters for undertaking mussel culture trials.

It would be pertinent to have study on the effect of coir retting zones on growth and attachment of mussel seeds to the strings, which often found by experiences and observations. Laboratory experiments should be widened to study the effect of coir retting zones on growth of mussel.

Similarly, export potential of mussel can be promoted through value addition experiments on depuration plants in filtered seawater. Organised fishermen's cooperatives can play a vital in various stages of seeding, harvesting, sorting, grading, packing, marketing with an intention of export potential.

The study emphatically disclosed the deep rooted influence of Group Dynamics network among the farmer folk as influenced by their participation, influence & styles of influence, decision making procedures, task function, maintenance function, group atmosphere, membership, feelings, norms, empathy, interpersonal trust and achievements of SHG.

The findings of the study can serve as a practical manual for organising and managing Self Help Groups for group action and participation on a sustainable basis. The scale of Group Dynamics Effectiveness Index can be used in similar future research in allied sectors. The identified interrelationships between the variables can act as catalytic points for promoting action and group empowerment, which might give useful insight on the feasibility of using the Group Dynamics network for indications on strengthening the working of these action groups.

Irrespective of the location specific problem oriented resource based alternative programmes for income generation, this study emphasises on the economic empowerment of rural women through mussel farming as a means of poverty eradication through Self Help Groups because, poverty can only be alleviated by mobilising the poor to solve their actual problems in the form of organised SHGs'. In the impact assessment, the correlation analysis revealed, a proportional relationship between the Group Dynamics Effectiveness and Average Yield obtained for each SHG, which ensures reasonable profit as a major consequence of adoption of Mussel farming enterprise bringing about economic empowerment of fisherfolk through organised Self Help Groups.

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About the book

Impact assessment studies have increasingly gained the attention of researchers, development planners and policy makers as well as the funding agencies with growing concern over accountability of investment, disenchantment with undesirable outcomes like differential benefits and widening social inequity and unsustainability of production system as well as unbalancing ecological implications of the projects. Extension science has a great role to play in unravelling the more intricate social issues related to technology and development. The emerging need to highlight the human face of the technology could be well addressed with the institutionalized research endeavours in various domains of impact assessment. This book presents analytical reflections on concepts, domain and praxiology of impact assessment, methodological framework, criteria and indicators and tools for impact assessment and future approach to impact assessment with respect to agricultural and rural development programmes and interventions. The need to strengthen impact assessment studies for policy development is succinctly exemplified by the cases contributed by the researchers.

About the editors

Dr. Baldeo Singh Ph.D., Principal Scientist & Head, Division of Agricultural Extension, IARI, Pusa, New Delhi. He has served for the cause of farmers and rural development in different capacities and has contributed significantly for the growth of extension discipline. Agricultural communication, Gender Empowerment and Farming System Development are his areas of present research. The Indian society of Extension Education recently bestowed upon him its coveted award of Dr. K. N. Singh Memorial Award for his outstanding research contribution in Agricultural Extension discipline. He played a key role in restructuring the course curricula of agricultural social science at national level and introduced new courses in Agricultural Extension discipline at IARI, New Delhi. He has to his credit more than 150 research & technical papers. His keen interest and diligent pursuit as academician fetched him the Best Teacher Award at IARI. He was also awarded by IARI in 2005 for his outstanding field extension/transfer of technology.

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