Summary and Conclusion

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- Recommendation for future Study
SUMMARY AND CONCLUSION

In the foregoing pages divided into six chapters, we have looked at the literature on the role of training as a major component of any managerial strategy and especially that relating to irrigation management. The important part various irrigation systems play in the national development of India was reviewed. The genesis of the Irrigation Management and Training Institute was presented along with its structure, role, and organizational methods, and training strategies followed in carrying out its mission for enabling optimal utilization of available irrigation sources in the state of Tamil Nadu. This review suggested that though IMTI has been functioning for the last twenty years, there has been no information on whether the training programmes conducted by it so far have produced the desired behavioral changes among its target stakeholders, viz., officials of the irrigation and other related departments and farmers. The ultimate test of its effectiveness could only be whether there has been a change in the use pattern of irrigation sources since the IMTI training programmes became operative. That would require more sophisticated methodology and the cost in terms of time, resources and expertise of such an endeavor would be prohibitive, therefore, this research has attempted to understand the impact of the training on the stakeholders as an halfway evaluation. As such the research confined itself to the following objectives:
- To study the adequacy of institute's infrastructure, expertise of the trainers, training process, teaching methods followed;
- To evaluate the post training performance of the trainees on the job;
- To suggest ways and means of enhancing the quality and effectiveness of the training programmes and
- To assess the training needs if any, of the personnel and to ascertain whether there are any gaps.

This research was designed to study the effectiveness of various training programmes of Tamil Nadu Irrigation Management Training Institute (IMTI) located at Tiruchirappalli district, Tamil Nadu State, India. It was contemplated to include the faculty members of IMTI (Trainers), participants in various training programmes from the different developmental departments/agencies and farmers who are the ultimate beneficiaries of the entire process as respondents for the study.

As the study is an evaluation study, it was felt appropriate to include all the stakeholders – the planners of the training programmes, the trainers and the trainees. Trainees include both the officials and farmers who are the beneficiaries.

The stakeholders in the IMTI may be classified under two broad categories,
viz., Trainees who represent the institute while the trainees include the various officials drawn from the Agriculture, Agricultural Engineering, Tamil Nadu Agricultural University and Public Works Department of the Tamil Nadu state who oversee the delivery of the water through the irrigation systems and the farmers who are the ultimate beneficiaries of the whole process.

Accordingly, as the number of trainers (faculty members) is small, all the trainers of the institute who are engaged in the training process were chosen. With regard to trainees, as the training is an ongoing process as per the training schedule finalized at the beginning of each year, it was decided to select a sample of 10 percent trainees at random category wise (officials and farmers) who have participated in the training. Thus out of 4382 officials trained during 2002-03, 438 officials (10% of the population) were randomly selected based on stratified random sampling method. Out of 438 respondents to whom questionnaire was mailed, only 300 respondents returned the filled in questionnaire.

Similarly, of the 3,849 farmers trained during 2002-003, 384 farmers (constituting 10% of the population) were chosen. Out of the 384 farmers, 300 farmers only could be reached by the researcher in person for a personal interview. The remaining 80 farmers were not available, when the personal interviews were scheduled. Thus, the sample respondents for the study include 15 trainers; 600 trainees (300 officials and 300 farmers).
The data for the study were collected from primary and secondary sources.

**Primary Data**

Primary data include information collected from the questionnaires filled by the respondents namely, the faculty of the institute and the officials among the trainees. As these two groups are educated, a structured questionnaire was prepared to elicit information from them. The researcher met the farmers and interviewed them in person with the help of this questionnaire.

**Secondary Data**

In addition to the above primary sources of data, the researcher also relied upon a few secondary sources of information to validate and substantiate some of the issues related to the research. As such, the following secondary sources like Annual Reports of IMTI, Published literature on irrigation systems, Reports of Public Works Department (PWD) of Tamil Nadu and other related publications were fully tapped.

The data collected have been collated and subject to appropriate statistical techniques ranging from simple percentages to sophisticated analysis of variance models.

Before proceeding to presenting a summary of the study and conclusion to be derived, one needs to be conscious of the following caveats:

1. The study was restricted to one year training programmes (2002-2003) and the perspectives of trainers as well as trainees.
2. Only those trainers who were on the rolls of the IMTI during the period of study were taken and interviewed. Thus those who worked for sometime in the IMTI and went back to their respective departments were out of the purview of the study.

3. With regard to farmers, though the IMTI caters to the training needs of the farmers across the state for want of time and practical limitations farmers trained from three districts only were taken as the sample of respondents.

**Trainer's Perspective**

An important finding is that though the institute was established with sound objectives and good infrastructure facilities, ironically it does not have any permanent faculty on its rolls.

- Of the 15 faculty members, almost all are drawn on deputation from various departments of the state government. Two-thirds (10 out of 15) of the faculty were drawn from Public Works Department, two each from Department of Agriculture and Agricultural Engineering and one from Tamil Nadu Agricultural University. It has been the practice of the director of the institute to request these agencies for deputation of the required persons based on the needs of the institute from time to time.

- Even among the faculty that are drawn on deputation very few (only three faculty) are senior level faculty: one at the Professor level and
two at the Associate Professor level. The rest are Assistant Professors (Six) and Research Associates (Six).

- Further, among the faculty, it was found that not many had any specialization in irrigation management either by virtue of training or their job profile in their respective organizations. Majority of the trainers opined that adequate care could be taken to ensure that people with right credentials in terms of training and exposure to irrigation systems only are drawn as faculty.

- The trainers also were concerned about their tenure with IMTI and the procedural constraints in repatriation back to their departments. Some (Three faculty) even felt that at times when promotion was due to them in their departments, they were promoted and for want of suitable post, they were sent to IMTI on deputation.

- As regards to training inputs, majority of the faculty (73.3%) opined that quite often, the training modules were not completely geared towards the actual needs of the trainees. This was largely due to the predetermined and fixed calendar of programmes and the contents drawn. The trainers on the whole opined that the needs of the trainees based on the ground level realities should be assessed and accordingly the curriculum of the training programmes should be designed such that the whole exercise will be more relevant and focused. More so, as the needs of the user departments (various
irrigation systems) fluctuate depending on the availability of water which is again subject to the rainfall and the preferred cropping pattern of the year.

- With regard to the selection of the trainees too, it was found that practices to spread widely information about the schedule of training programme in advance to the user departments were not standardized. Participants, by and large, were nominated by the user departments of government in a routine manner in response to the communication from the Director, IMTI without regard to the actual needs of the departments. Majority of the respondents felt that selection of the trainees could be made - both at the department's level while nominating and at the institute level while accepting the participants giving due weight to the natural flair and aptitude of the participants.

- The trainers (9 out of 15) felt that the institute could play a more active role in selecting the participants rather than merely accepting whoever is nominated by the sponsoring agencies.

- The curriculum and pedagogy of the institute also was found to be far from satisfactory while some of the inputs in the curriculum were not in tune with the contemporary demands. The pedagogy too suffers from too much of conventional classroom teaching. The need for updating the curriculum incorporating the latest tools and techniques of water management by fully exploiting the audio-visual gadgets was fully
evident. Similarly the number of field visits where the trainees could gain first hand knowledge of the practical issues could be increased.

- It was also found that the training programmes for the target groups were not scheduled evenly throughout the year. It all depends on the response from the user departments resulting in, quite often, too many programmes being scheduled in a row while at times for long stretches in the year no program was organized. Consequently the usage of the institute's resources, both physical and human, was found to be sub-optimal.

- Another area of concern as found out in the study was almost all the programmes were organized with mostly in-house expertise and that too the contents of the programmes stressing mostly theoretical issues. As such, it is high time that renowned irrigation engineers, social activists, representatives of the non-governmental organizations (NGOs) and progressive farmers and opinion leaders at the village level also were invited to address the participants. Such exposure enables the trainees themselves to familiarize with the best practices available and adopted in different places.

- Any training could be effective only when the institute takes suitable follow-up initiatives. This gains more importance in the case of trainees who may need continuous guidance as they implement the practices in the field. They may also need the assistance from other agencies of
the government that deal with the supplies of credit, fertilizers and equipments.

- Majority of the faculty (80.00%) felt that there is no standardized follow-up mechanism to ensure the implementation of skills and practices acquired by the trainees in the training programmes. Proper processes that establish a lasting relationship between the trainees and trainers are also inadequate, leave alone supply of relevant literature on innovative practices on a continuous basis.

Trainees’ Perspective

i) Officials

The trainees of the institute include two categories; viz., namely officials and farmers. Officials refer to those who are nominated for training by the departments such as Public Works (PWD), Agriculture and Agricultural Engineering. These three departments are associated with the management of irrigation systems in Tamil Nadu. Therefore, these departments may be considered as the user departments.

- Among these departments, it was found that an overwhelming majority of the participants (90 percent) were from the Public Works Department while the remaining were from the Department of Agriculture (6 percent) and Department of Agricultural Engineering (4 percent).
In terms of the level of these participants in their respective organizations, it was found that majority (52 percent) of them were lower level officers who directly deal with the operational aspects of water management, followed by middle level managers (40 percent) and senior level managers (8 percent). The last two categories of officials are usually engaged in policy formulation.

The Tamil Nadu state has four distinct regions, namely, Madurai, Pollachi Tiruchirappalli, and Chennai. In the present study, it was found that bulk of the participants (82 percent) was from Madurai, Pollachi and Tiruchirappalli regions, while the number of participants (18 percent) from the Chennai region was relatively less. One of the reasons for a smaller number of participants from Chennai region was due to poor response, largely owing to different priorities of the work.

With regard to the academic credentials of officer participants, it is heartening to note that though the minimum qualification prescribed was diploma in engineering, quite a large number (84.00%) were graduates and post graduates.

With respect to the contents of the curriculum, delivery, usefulness of the training programmes, on the whole, majority of the respondents (82 percent) sounded positive. However, though small in number, about 12 percent of the respondents felt the need for updating the curriculum. As opined by 68 percent respondents the training modules were useful
in improving their job performance. They had such a positive disposition towards the training given at IMTI that about 90 percent of the respondents did say that they had recommended the institute’s programmes to their fellow colleagues.

- Another noteworthy finding was that though, on the whole, the participants were satisfied with the quality of the training inputs, about half of the respondents had opined that distinguished contributors in the fields of irrigation, agriculture extension services and progressive farmers could be roped in to address the participants. Their experiences and achievements could certainly refresh and enrich the knowledge base of the training sessions.

- A similar number of respondents also felt that IMTI could launch awareness programmes in the general public on effective irrigation management, so that the attitudinal changes with regard to proper utilization of water would be brought out.

- In an effort to quantify the responses given by the official trainees, ranking indicated by the respondents on various dimensions of training effectiveness, the rank scores for about 34 items were pooled and mean scores were computed for categories of six variables representing the characteristics and background of the official trainees. A detailed statistical analysis using ONE WAY ANOVA found that category means of ranking scores given by the official trainees did not
vary much between categories of independent variables: organizational affiliation, cadre level, region, educational qualification, area of specialization and prior training courses attended. None of the ANOVA analysis turned out to produce statistically significant results and the null hypothesis of no difference between category means could not be rejected. If there were differences in rank scores, then it would have necessitated a change in training strategy with appropriate modifications in the composition of a particular training programme as well its content and pedagogy.

ii) Farmers

Farmers constitute an important segment of the trainees as they are the ultimate beneficiaries of all training initiatives. Therefore right from the inception, IMTI has been developing simple, easy to understand modules for the farmers.

- An important finding regarding the composition of the farmer-trainees in terms of their educational level is that there were no illiterates among them though many did not have formal schooling. Nearly 84 percent of the farmer-trainees had at least primary school level education and a few were also graduates. Homogeneity by literacy level would make designing a curriculum and training strategy easier than when the group consists of those with varying levels education.
- As regards the land holding size of the sample farmers, about 60 percent of them were medium size farmers owning between 5 – 10 acres of land, 34 percent were small farmers with an average land holding of less than 5 acres, while the rest (about 6 percent) had land holding exceeding 10 acres each. For almost all the farmers, agriculture has been the family occupation for generations.

- In respect to the content and delivery of the inputs in the training programmes 58 percent suggested that they were satisfied, about 20 percent responded that it was not up to their expectations, while the rest viewed that training was a rewarding experience.

- With regard to suggestions to improve the effectiveness of the programmes, almost all the respondents felt the need for guidance from irrigation officials and experts on continuous basis. Further, more than three fourths (77 percent) of the respondents suggested organizing visits of the farmers to other districts and states in India to familiarize with the contemporary agricultural practices in those places.

- Responses of the farmer trainees related to their rating of the usefulness of the training programme they had undergone to their day to day operations relating to use of irrigations sources were analyzed by computing category means of rating scores on usefulness for six socio-economic background variables.
Unlike in the case of official-trainees, the differences in means of rating score for categories of six selected independent variables were found to be statistically significant (p<.01). The findings were very interesting especially considering that there were no such statistically significant differences when the mean rating scores were compared across categories of the independent variable. One of the reasons is that there was less variance among the ratings given by the official trainees and therefore it is likely that there were no statistically significant differences among categories. It is also likely that the official trainees in the sample acted less than honestly and their responses to rating questions were given more to please the researcher than with a view to provide an objective evaluation of the training programme. It is to be noted that the researcher is also one of their colleagues and some of the faculty members in IMTI were either colleagues or supervisors of the official trainees.

In the case of the farmer trainees, there seems to be an effort to present a realistic picture of the training programme and therefore one is able to notice statistically significant differences in the mean rating scores between categories of independent variables: educational level, land holding size, number of training courses attended and extent of social participation.
- One major finding is that there is an oversrepresentation of middle class and upper middle class farmers among farmer-trainees when one looks at their composition by educational level, farm size and social participation. It could be the result of IMTI policy which prefers to select those who are more receptive to attitudinal and behavioural change that would result in optimal utilization of already meager irrigation resources.

- Another finding that stands out is that those who had agriculture as the primary occupation benefited more by the training than those who were involved in it only as a secondary occupation. This finding can be expected because only those farmers whose only source of livelihood is agriculture are likely to be more interested in learning and changing.

Based on the analysis of the data collected from trainers and trainees (both officials and farmers), discussion with the IMTI faculty members and officials, and experts in the field, the following observations and suggestions are made:

The training programme of IMTI has been found to be reasonably useful by both the official trainees as well as the farmer trainees, though official trainees’ ratings are more homogeneous on the side of depicting the training programme in a very positive light with a minuscule percentage giving a training programme a thumbs down sign. On the other hand, one could notice from the responses of the farmer trainees, that they have attempted to present a much
more objective assessment of the training and therefore their responses are useful for effecting appropriate changes in training strategy and course content.

On the basis of policy laid down by the Governing Council of IMTI, it has been the tradition that the post of Director IMTI has always been occupied by one of the Chief Engineer of PWD. However, except a few, none of them was able to continue in that post for more than one year duration. Such a short tenure is definitely far, far inadequate for an incumbent to implement to his/her vision, if at all he/she is able to come up with a vision. One of the reasons for such a situation where managerial continuity could not be maintained is that the individuals appointed to the post were almost at the fag end of their career and on the verge of retirement. Even when individuals with longer duration of service were appointed, posting at IMTI was used as only a stop-gap arrangement before posting to a more desirable location was made. It is worth repeating here that a major ingredient for success of an institution is the dynamic leadership of the head and senior managerial team. Hence it is suggested that a person having rich experience in Irrigation management with minimum of balance period of service of two years may be posted as director. He may be either from the department or outside the department but have broad vision to manage the institute in tune with fast and latest technological developments. This would make the training programme even more effective in bringing about behavioural change among the stakeholders.
One other significant action that would make the training programme even more successful is to keep the sanctioned 33 faculty positions filled. As of now, only 15 faculty members are available and remaining 18 faculty positions are kept vacant. Such a deviation from the planned faculty structure would definitely hinder the achievement of the institute's mission and objectives.

As the stakeholder training load remains very high and also due to the need for continuous updating of knowledge and skills of the stakeholders, it is of primary importance to keep the faculty strength at least at 75% level, if not the full complement. Furthermore, most of the faculty members currently on roll are on loan from some other department and therefore their tenure in the institute depends on the whims and fancies of the administration in their parent departments. With such an uncertainty surrounding their tenure in the IMTI, one cannot expect to these transient faculty members to show any initiative, commitment and dedication to further the objectives of the institute.

A disturbing feature of faculty posting policy that might have a bearing on the effectiveness of the training programme is the lack of experience in irrigation related matters by those seconded to the IMTI as faculty members from other government departments, mostly from PWD. This results in discontinuity and lack of commitment for the programmes organized by the institute. The fact that one deputationist cannot stay in the institute for more than six years continuously, which is the current policy, adds to the organisational woes of the institute. A policy alternative that emerges from the above is that a faculty recruitment system may be adopted whereby 50 percent of the faculty members are appointed permanently on the basis of specialization by open
recruitment and the rest may be absorbed from various departments of the Government as is being done now.

In the case of official trainees, it has been found that training at IMTI does not confer any post-training advantage in terms of recognition of their training as an additional condition for promotion or any other incentives, either material or non-material. Furthermore, guidelines for selecting officials are training at IMTI may be fine tuned in such a way that optimal benefits accrue to the individual trainee as well as to the overall objective of the programme.

*At present the sponsoring departments are requesting IMTI to impart training on topics already by them, though only in a broad outline. Therefore it is important that after getting the broad outline of topics, trainers have to conduct need assessment in more specific terms reflecting the ground reality. Only after this, the training programmes have to be designed and conducted.

*The selection of candidates for training among officials should be done in such a way that the training would improve the job performance of the candidates selected. When such a criterion is applied in the selection process, it is likely to create a sense of need fulfillment, increased urge for learning which would go a long way in enhancing the effectiveness of the training programmes. When trainees are selected not on the basis of need but on the basis of administrative expediency, they are less likely to be motivated. Eventually, this would simply be a waste of efforts, resources and time which are paid for from public funds.
While selecting the farmer trainees, the officials of IMTI may have to play an active role in consultation with officials of water resource organisations and office bearers of water user associations. Enough care must be taken to select a heterogeneous group in terms of variability in age, education, motivation, inclination to transmit the knowledge to other farmers actively engaged in cultivation so that the purpose of this training programme would be served still better.

Apart from the present research, no periodical evaluation has been conducted on the training programmes so far. At present, the evaluation criterion applied is the total number of courses conducted and total number of candidates trained. Such quantity-based evaluation would only be a bean counting exercise and one would not be able to make judgments on the effectiveness of the programmes on producing desirable change. Therefore, a system may be set up to conduct periodical quality checks on the training content, pedagogy and final outcomes.

On the basis of discussions with officials, administrators and official trainees, it is understood that the regional level officers, in general, have little interest in training and therefore are not willing to depute the right persons for the right course. Such officers should be encouraged to frame the training needs of their engineers and they should also be associated right from the designing of the programme till its completion.
* The post training placement has an impact on the utility of training. Hence, the user departments have to show keen interest in placing the trained personnels in appropriate places so that they can effectively apply the new knowledge gained through training and improve themselves in the discharge of their job functions.

* Regarding teaching methods adopted in the training institute, it was found that lecture method predominated. Since the participants are inservice personnels as well as field oficials, it is likely to be monotonous for them to sit continuously in the class like regular students. Therefore, it is suggested that different methods like group dicussion, case studies, and field demonstration may be used. Further, audovisual aids may be utilised in an extensive way rather than adhering to conventional classroom teaching. Video cassettes on various improved farm packages, environmental protection programmes which are availble with various agencies may be inducted in the class room teaching.

*Infrastructural facilities such as audio-visual material, seating arrangemnt, ventilation and, light, transportation, boarding and library etc., available at IMTI is quite sufficient for organising simultaneously four programmes. It is evident that IMTI had congenial training environment. However, it is necessary that facilities are maintained in good condition by regular and periodical inspections and repair.
In order to further the objectives of the institute, respondents suggested a set of varied and innovative actions to be taken by IMTI and on careful analysis of the verbatim responses, the following measures suggested by them deserve serious attention.

- An information centre may be established at the training institute with display facilities on irrigation practices, plant protection technologies and crop management techniques in an appealing manner.

- Information on improved irrigation practices may be broadcast through All India Radio and Television on periodical intervals so that it will reach the farmers and help to enhance their knowledge.

- Apart from the training activities more effort has to be taken to acquire through organiseing seminars and workshop may be formulated.

- Periodical faculty meetings may be organised to discuss about the courses and topics of training programme.

- Intensive programme on Training of Trainers may be organised for the faculty members so that they can equip themselves with the latest technical developments.

- IMTI may formulate a strategy to offer recognised certificate/diploma courses for the outsiders ie other than department personnel on cost basis after getting policy approval from the government for
appointing personnel as Irrigation Assistant for the each elected water users associations in Tamilnadu.

- It is suggested that adequate care could be taken to ensure that people with right credentials in terms of training and exposure to irrigation systems only drawn as faculty.

- For the optimal use of the institute’s resources both physical and human, the training programmes for the target groups should be scheduled evenly through out the year.

- Collaborative link with related and reputed institutions may be initiated for technological transfer of knowledge on irrigation and allied subjects.

**SUGGESTIONS FOR FUTURE RESEARCH:**

Systematic research on training effectiveness may be built into the structure of the programme so that various training strategies could be systematically evaluated and appropriate course correction could be undertaken before it becomes too late.

Research on the impact of the training programme may be undertaken by suitable quasi-experimental designs for taking into consideration training as an intervention and by selecting either matched controls or randomized control.

There are about more than forty training institutes imparting training on one aspect or other of governmental functioning. A comparative study of selected institutions may be undertaken to assess the relative effectiveness of the training strategies followed.