Chapter 5

Research Framework & Methodology

5.0 Introduction

This chapter presents the Research Framework and Methodology adopted in this study. Measuring or evaluating the effectiveness of the Management Development Programmes is at the core of improving the quality of the MDPs held in the organisations. Soft skills- and attitude-based MDPs have the capability to improve the Emotional Intelligence of the participating managers. It is therefore necessary to measure the various domains of Emotional Intelligence of the participants once before attending an MDP and once again after attending the programme for knowing the level of improvement that has taken place. Hence EI measurement can lead to a kind of tangible and objective evaluation of the impact of the MDPs.

5.1 The Problem

In today’s era, there is an eagerness to ascertain the impact and effectiveness of any jobs/tasks/projects being undertaken. This result-oriented mindset is helping evolve concepts like process mapping, process review, process improvement etc. The field of training and development is no exception. Training directors and managers are taking keen interest in “Training Evaluation”. It has actually become an integral and ongoing part of training and HRD in the organisations and institutions.

The Training Evaluation is extremely challenging and delicate area in Training & Development. Within that, “MDP evaluation” is ever more challenging as well as sensitive. It needs to be handled and managed with care and attention.
MDP evaluation has to be done without prejudice and preset narrow targets. If the training evaluators are under obligation or constrained to prove something (good/bad or improvement/deterioration etc.) then the purpose of the evaluation is altogether defeated. It is imperative that MDP evaluation be done systemically and objectively.

A number of studies have been conducted on training evaluation in general and MDP evaluation in particular. However, very few studies are available in the field of MDP evaluation where the evaluation has been able to detect tangible, measurable, specific organizational and individual benefits due to the participation in an MDP. We could not come across many studies on objective evaluation of the soft skill-based MDPs.

Today’s most successful and growing organisations are expected to be emotionally intelligent. The emotionally intelligent organisations are inhabited by the emotionally intelligent leaders and managers. There was a concern in SAIL/DSP to assess whether its training programmes are influencing the EI of its participants. The training programmes which are designed to enhance the social skills, values, soft skills, personal competencies are expected to improve the EI of the participants as well. In Durgapur Steel Plant there are a number of Management Development Programmes for the front line managers designed and conducted for enhancing the soft skills and social skills of the participants. The organisation desired an objective evaluation of those selected programmes. But evaluation of those programmes is really challenging not only in the context of SAIL/DSP but also in any kind of business organizations. In fact, measuring any attitude-based item in an objective manner is extremely challenging.

Lack of concrete quantitative approaches for evaluating the management programmes and lack of depth and width of MDP-related research particularly
in the context of the programme evaluation has been a major concern area in this regard. A key imperative, therefore, is evaluating the soft skill-based MDPs in a systematic manner. Present study is a step in that direction.

5.2 Objectives

This study aims to understand Training Evaluation in respect of the Management Development Programmes, especially those designed to improve the soft skills and social skills of the participating managers. This study makes an attempt to evolve a model for MDP evaluation through measurement of change in the Emotional Intelligence of the participants. More specifically we aim to:

1) Present a new Training Evaluation model: “Training Evaluation through Emotional Intelligence measurement” for the soft skill-based MDPs.
2) Study the inter-relationship between various socio-demographic factors and Emotional Intelligence of the frontline managers in SAIL/DSP.
3) Study the average level of Emotional Intelligence of the frontline managers at SAIL/DSP.
4) Test the effectiveness of the selected MDPs in enhancing various Emotional competencies and clusters of the participating managers.
5) Find out ways to develop the emotional intelligence of the people and sustain it for a longer period.

5.3 Selection of the MDPs and their evaluation pattern

There are 13 Management Development Programmes conducted for the frontline executives in SAIL/DSP on a regular basis. Out of these, seven MDPs are having some contents related to the soft skills, social skills or personal competencies. The process of programme content analysis was done by a team of trainers and MDP experts. Finally three MDPs were selected for evaluation in this study after second round of discussion. These three MDPs are
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Enhancing Managerial Effectiveness (EME), Action Leadership Programme (ALP) and Management Development Programme-II (MDP-II). Methodology for selection has been based on “Opinion collection from the trainers/experts” of SAIL/DSP. Outside experts were also consulted. These three programmes were the key MDPs regularly conducted at all SAIL plants/units for the frontline managers of E3 to E5 grades. Moreover, each of EME, ALP and MDP-II has some specific programme contents that are supposed to improve the participating managers’ attitude aspects and the social intelligence. The programme structures of the three selected MDPs are presented in Annexure-6. It was decided that one specific programme of each type would be taken up for this study. The three specific programmes selected for the evaluation study are: EME (held from 07/03/2006 to 11/03/2006 with 10 participants of E5 level), ALP (held from 01/02/2006 to 03/02/2006 with 4 participants of E3 to E5 level) and one MDP-II (held from 17/01/2006 to 20/01/2006 with 15 participants of E3 to E4 level). All the 29 (10 + 4 + 15 = 29) participants/managers who participated in any one of these three programmes have been assessed in terms of enhancement in their EI competencies due to their participation in the respective MDP. The total period of study is for one year from January, 2006 to December, 2006. During this period semi-structured interviews of the managers / respondents were also conduct along with administration of the relevant questionnaires.

These particular set of programmes were chosen for they were held almost concurrently. The EI evaluation for the participants of these three particular MDPs were done twice – once before training and another time after training. Data collection for Pre-training evaluation for all three MDP participants was done using ECI – 2.0 questionnaire during the period when the participants were attending the programme at CHRD. Data collection for the Post-training evaluation was done 6 months after the respective programmes were conducted. For MDP-II participants the data collection for Post-training
evaluation was done from 20.07.2006 to 23.07.2006, for ALP participants it was from 03.08.2006 to 07.08.2006 and for EME participants from 11.09.2006 to 15.09.2006. It was decided to carry out the post-training assessment 6 months after the respective programmes were held for it has been found from earlier studies (as reported by HayGroup representative) that it takes minimum 6 to 7 months time for the learners/participants to internalize/develop the EI competencies in them.

These three groups of participant (MDP-II : 15 participants, ALP : 4 participants and EME : 10 participants, i.e. total 29 participants) comprised the “experimental groups” or EG. For offsetting the effect of time and other extraneous factors in the study one common control group was formed and studied. This control group was categorised as “pooled control group” or PCG which consists of E3, E4 and E5 level managers (a total of 15 executives) who did not participate in any management development programme in the year 2006. The PCG participants were also evaluated for their EI twice – once, between 14.03.2006 and 18.03.2006 (time T1) and another time, between 20.09.2006 and 25.09.2006 (time T2). The time T2 for the assessment of pooled control group members has been fixed in such a manner that it matches with the timing of the post-training evaluation of the MDP held last i.e. EME programme. And the time T1 for the PCG members’ assessment has been finalized almost 6 months before time T2. Each member of EG and PCG both was assessed by his supervisor (one person), two colleagues and two juniors working under him (the respondents were DSP executivesthemselves). In this study, self assessment has not been used because of the fact that self-assessment is mostly inflated and the experts opine that the “self assessment” and the “assessment by others” cannot be mixed up or averaged for EI calculation purpose. In fact for research purpose non-self rating is considered as authentic and most useful. The improvement of each of the EGs from pre- to post-training evaluation on EI competencies has been compared [refer para 6.2
(c) of chapter 6] with the improvement found in the PCG from time T1 to T2, to actually understand the impact of training through the three MDPs under consideration in this study. Plan of evaluation is presented in Table 5.1.

Table 5.1: Evaluation of MDP participants/Control Group members

<table>
<thead>
<tr>
<th>GROUP</th>
<th>EVAL. – 1 Time T1</th>
<th>EVAL. – 2 Time T2</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDP-II</td>
<td>17-20/01/06</td>
<td>20-23/07/06</td>
<td>For the MDP participants evaluation-1 has been done during the respective programme. For any member of Experimental Group or the Pooled Control Group there are a total 5 assessors/respondents. Reporting Officer (1), Peers (2) and Juniors (2).</td>
</tr>
<tr>
<td>(EG)</td>
<td>15 participants</td>
<td>15 participants</td>
<td></td>
</tr>
<tr>
<td>ALP</td>
<td>01-03/02/06</td>
<td>03-07/08/06</td>
<td></td>
</tr>
<tr>
<td>(EG)</td>
<td>4 participants</td>
<td>4 participants</td>
<td></td>
</tr>
<tr>
<td>EME</td>
<td>07-11/03/06</td>
<td>11-15/09/06</td>
<td></td>
</tr>
<tr>
<td>(EG)</td>
<td>10 participants</td>
<td>10 participants</td>
<td></td>
</tr>
<tr>
<td>PCG</td>
<td>14-18/03/06</td>
<td>20-25/09/06</td>
<td></td>
</tr>
<tr>
<td>(E3-E5)</td>
<td>15 members</td>
<td>15 members</td>
<td></td>
</tr>
</tbody>
</table>

As all the 29 participants of the selected three programme have been considered for assessment in this study, this is a case of “complete enumeration”, which means that for the experimental group members we have done “census study” (not sampling). The 15 members of the PCG have been selected as per “convenience sampling”. Here, the members (total = 29 + 15 = 44) of EG and PCG were not the main respondents, as specified earlier, for our study. Rather they were assessed (for their EI competencies) by the respondent groups who were also the DSP managers. The respondents were their Reporting Officers, Colleagues and Juniors who were the executives of DSP from E1 to E7 levels. So, ideally there should have been 220 respondents (44 x 5) and 440 responses (44 x 5 x 2) including all the assessments of all three EGs and the PCG at time T1 and the subsequent assessments at time T2. But actually in the T1 assessment phase for all the four groups (three EGs and one PCG) a total 201 filled-in questionnaires were returned and in the T2
assessment phase 183 filled-in forms could be collected. So, a total of 384 forms filled in by the respondents for assessment (at time T1 and T2) of the 44 assessed managers including EG members and PCG members were returned. Therefore, 87% of the selected respondents actually responded.

In Durgapur Steel Plant the strength of total executives/managers (from E1 to E9 grades) is 1728 and the strength of E3 to E5 executives is 649. Total strength of our respondent sample (only EG members who are all between E3 and E5 grades) is 29 which is about 4.5% of the total population. So, the sample size in this case is standard and balanced for analysis and interpretation. As all the frontline managers (E3 to E5) in SAIL/DSP attend these 3 programmes one after another at some point in time, it can be concluded that the sample in this study is the true reflection of the population in terms of characteristics like education, experience, competencies, learnability etc. even though the sample has been selected as per convenience sampling.

5.4 Data source

The study is based on both primary and secondary data. The primary data has been collected through valid and reliable instrument (called ECI-2.0). ECI-2.0 is a questionnaire (designed by M/S HayGroup) having a total number of 72 statements/questions. ECI-2.0 was first distributed to a few DSP managers and trainers and they were requested to fill in one questionnaire each (for assessing one of their well-known colleagues) on trial basis. This was aimed at "Statement checking" before using the instrument/questionnaire for final data collection. In the main study one "Basic information sheet" was used for collecting socio-demographic data relating to the MDP participants. Basic information Sheets (refer annexure-1) were filled in by the MDP participants themselves and ECI-2.0 questionnaires (refer annexure-3) were filled in by the
manager/Reporting Officer, colleagues and the juniors of the MDP participants before training and also 6 months after training.

Secondary data have also been used in this study. Programme ratings of the consecutive 10 programmes (including the specific programmes selected for this study) of each of the 3 selected MDPs have been collected from CHRD’s training records of DSP. The programme ratings indicate the participants “satisfaction level” after attending the MDP.

5.5 Research Design
In view of the fact that most of the training evaluation models available particularly in the area of the Management Development Programmes are subjective, an attempt has been made to design a “robust MDP evaluation model” that can measure the effectiveness of the MDPs/LDPs quantitatively. To that effect this study attempted at evolving a new approach for effective evaluation of the MDPs. This model of training evaluation can then be applied to those MDPs which are conducted for improving soft skills. This new model of TE can be termed as “TE through EI assessment”. The research design evolved and finalized for the study can be described as a descriptive one. It may be noted that the entire research design for this study was crystallized in consultation with the experts of M/S HayGroup (refer Annexure-8) of Boston, USA. They granted this researcher the status of their “approved researcher”. Some other noted experts on research methodology and statistics were also consulted.

5.6 Selection of a valid and reliable Instrument and its Validity & Reliability
For carrying out MDP evaluation by assessing the EI of the participants, the instrument for assessment/measurement needs to stand the test of scientific rigour. Initially an attempt was made to design/develop a suitable instrument for EI measurement. For designing a high quality instrument for the study,
available instruments were consulted and analysed. At the same time the available models of EI were also studied comprehensively. For example, Goleman model of EI has 18 different EI competencies such as Emotional self-awareness, accurate self-assessment, self-confidence etc. So, for designing a comprehensive EI measuring instrument/questionnaire all the 18 individual competencies have to be covered by inclusion of some competency-specific questions. Developing a questionnaire is easier. However, testing its validity and reliability and subsequently standardizing it for application purpose is extremely challenging and time consuming. Because, for testing and ensuring validity/reliability of any instrument relating to people skills / leadership skills etc., a lot of resources (time, money, manpower, effort etc.) are needed and the application of the instrument to be tested has to be on a large-scale basis. So, the existing instruments were searched for and studied. The following instruments were perused:

1) Behavioural event interviewing questionnaire (self-report only) designed by Dr. N K Chadha of Delhi University and Dr. Dalip Singh, IAS.

2) Self-report questionnaire and multi-rater assessment questionnaire proposed by Dr. Emily Sterret. (reliability / validity not tested on large scale)

3) Mayer-Salovey-Caruso emotional intelligence test (MSCEIT) designed by the three EI experts Mayer, Salovey and Caruso. (self-report only)

4) Trait EI self-report questionnaire (TEIQue) established by K V Petrides and others.

5) EQ-i instrument (self-report only) designed by Reuven Bar-on.

6) Emotional Competence Inventory (ECI) questionnaire designed and developed by Dr. Daniel Goleman and Dr. Richard Boyatzis (based on mixed model of EI and having scope for both self-report and non-self report systems). Two versions of the questionnaire available. The revised and latest version is known as ECI – 2.0.
Finally, ECI – 2.0 (refer Annexures-3 & 9) was selected as the most apt instrument for this study. This instrument had earlier been tested on many employees of many organisations from different countries of a few continents (including Asia/India) and found valid & reliable, as informed by HayGroup experts.

There are multiple criteria for selection of the instrument. Firstly, one has to consider that the instrument is based on which model of EI. Secondly, whether it’s a self-report instrument or multi-rater instrument? Thirdly, whether the instrument is valid and reliable particularly in the Indian context? ECI – 2.0 was finally selected as an apt instrument for this study. This study is about training evaluation which is ultimately for development purpose and ECI – 2.0 is an instrument which as per its designers at HayGroup, is also to be used for development purpose and not for administrative purpose like promotion, retrenchment etc. ECI – 2.0 is an instrument which is not available to the users in general. HayGroup of USA gives permission and access to it free of cost only to the EI researchers and the scholars when they are fully convinced of the potential, academic contributions and depth of the proposed research. Once the Instrument was finalized, it was then assessed whether the ECI – 2.0 in full should be used for the measurement purpose in all the selected three MDPs or the relevant and specific part of it should be used depending upon the specific MDP and its contents etc. After discussion with the experts it was decided that the entire ECI – 2.0 with all its 72 questions (refer Annexure-3 and 4) should be used in its unchanged form for EI measurement of the participants of all the three MDPs before training and after training.

As the ECI – 2.0 in its unchanged form has been used for this study, the testing of validity and reliability of ECI – 2.0 is not required, because the validity and reliability is confirmed by the documents given in ECI – 2.0 technical manual
prepared by its original designers at HayGroup. Internal Consistency and Test-Retest Reliability were found high for the ECI - 2.0 and it passed the tests of Concurrent Validity, Predictive Validity, Content Validity, Construct Validity etc. as reported in the ECI – 2.0 technical manual in detail.

5.7 Pattern of analysis

In this study we have collected data in 3 distinct ways. Firstly, in the main study, the primary data (quantitative) have been collected through ECI – 2.0 questionnaires, once before training and another time, 6 to 7 months after training. Here, data have been collected for the four groups of DSP managers i.e. three Experimental Groups (or Treatment Groups) and one Pooled Control Group. The data have been gathered from respondents, that are another set of DSP managers who happen to be Reporting Officers, Peers and Juniors of the EG members and the PCG members. Data collected through the main study have been analysed using the SPSS and MS-Excel packages. Secondly, the main quantitative study has been supplemented by another set of auxiliary data collected through a series of semi-structured interviews of selected DSP managers (some of them were EG/PCG members and some of them were non-members as well). These auxiliary data have been analysed and used to finally prepare a comprehensive Case Study. Thirdly, a limited degree of Secondary Data have also been analysed and used in this study to corroborate our findings from the Main Study. Secondary Data is mainly in the form of conventional “reaction level feedback” (quantitative & qualitative) given by the participants of the three MDPs under consideration. These data so collected has been analysed using simple arithmetic such as Mean, Percentage etc.

The main (quantitative) study has used a standard instrument called ECI-2.0 (the revised version of ECI developed by Goleman and Boyatzis of HayGroup). Norms of analysis have also been proposed by HayGroup (through their “ECI technical manual [new]” updated in Oct. 2005). The calculation of the emotional competencies for any particular candidate (i.e. member of EG or
PCG) has been done using the data collected from the field according to the multi-rater assessment system in a standard way (refer annexures- 5 and 9). In this study self-rating has been avoided and “rating by others” has been chosen as the method for assessing emotional competencies. Data has been analysed in three ways firstly, individual EI competency-wise, secondly, cluster-wise and thirdly, mandatory competency-wise.

There are 6 mandatory competencies out of the total 18 (refer Annexure-7). According to the Goleman model (i.e Emotional Competence Inventory model), there is no concept of overall Emotional Intelligence. The total or average of all the individual competencies for any person cannot give any meaningful information about that person, because nobody is expected or required to have high ratings in all the competencies for being successful. Rather, there are some competencies which are antagonistic and there are some which may have alternate manifestations. For example, if someone demonstrates a great deal of Self control, he may have a difficulty demonstrating Initiative. Individuals may be equally effective in many ways. But there are some competencies which are mandatory for any individual’s effectiveness and success. The mandatory competencies are Accurate self assessment, Emotional self awareness, Self confidence, Emotional self control, Empathy and Influence. The measure of the mandatory competencies is very important and meaningful for any person. Competency scores for each of the individual competencies and clusters including “mandatory competencies” (or mandcom) have been calculated on a five-point Likert scale. The individual competency scores for each of the MDP participants and the control group members have been calculated by using a well-designed “calculation format” (refer Annexure-5).

For this study quantitative analysis has been done with the help of MS-Excel and SPSS packages as and when required. Individual competency scores (pre-
training and post-training) for all the 44 members of the four groups (ALP, EME, MDP-II and PCG) have been calculated on a five-point Likert scale using the data collected from the field (refer Annexures-1, 2, 3 and 9). Cluster-wise competency scores and the mandcom score also have been calculated on a five-point scale using the simple arithmetic mean. The following formulae have been used to find out the various ECI cluster scores:

\[
SA = \frac{ASA + ESA + SC}{3} \quad SM = \frac{ESC + T + A + AO + I + O}{6} \\
SoA = \frac{E + OA + SO}{3} \quad RM = \frac{IL + In + DO + CC + CM + TC}{6}
\]

\[
Mandcom = \frac{ASA + ESA + SC + ESC + E + In}{6}
\]

Improvement in the competencies and the clusters has been ascertained through the Learning Index values for each of the 44 members/managers. because Learning Index is a better measure of effectiveness than the "difference between post- and pre-training" scores. LI values have been calculated by using the standard formula (refer Chapters-1 and 4). Say for example, LI(Accurate Self Assessment) is to be calculated for a particular individual, whose ASA\text{pre-training} and ASA\text{post-training} scores are 3.5 and 4.0 (both on a 5-point scale) respectively. In this case the LI(Learning Index) will be calculated as follows:

\[
LI(ASA) = \frac{4.0 - 3.5}{5.0 - 3.5} \times 100 = 33.33
\]

Correlation between the Mandcom and various socio-demographic factors has been tested using SPSS (Pearson's Correlation Module). For ascertaining training effectiveness of the three MDPs, Kruskal-Wallis one way ANOVA by ranks or Kruskal-Wallis test (a simple non-parametric statistical test) has been applied and inferences drawn accordingly.
The average % improvements (shown in the table no. 6.8) in Emotional Intelligence due to the various MDPs has been calculated using the following formulae:

\[
\text{Net Improvement} = (\text{Post-training score} - \text{Pre-training score})_{\text{for experimental group}} - (\text{Post-training score} - \text{Pre-training score})_{\text{for pooled control group}}
\]

\[
\% \text{ improvement} = \frac{\text{Net Improvement}}{\text{Pre-training score}} \times 100
\]

5.8 **Use of auxiliary Instrument for qualitative analysis**

In this study the EI improvement, leadership development process etc. have been analysed using qualitative as well as quantitative approach. Some members of EGs, PCG and some non-respondents (they are also the managers in DSP) were interviewed in a semi-structured manner. The data and information available from the series of interviews were recorded and subsequently used to develop a comprehensive Case Study (detailed in chapter 6) on leadership development process. The case study supplemented quantitative analysis carried out as a part of the main study.

5.9 **Leadership Competencies or EI Competencies**

There are a total 18 EI competencies (that form 4 clusters) as per the ECI – 2.0 system of assessment proposed by Goleman and Boyatzis of HayGroup. The EI competencies and clusters are detailed in Annexure-7. In this study all the 44 members of EG and PCG have been assessed for 23 parameters. These 23 parameters are: 18 individual competencies, four (4) competency clusters (refer annexures-7&9) and one (1) special cluster called Mandcom [refer para 5.7].
5.10 Limitations of the Study

- Though EI competencies are applicable to various industries and organisations, there is a need to exercise caution while applying the findings / recommendations of this study in other industries and organisations.

- In some cases, less than 5 assessors have assessed some particular managers due to non-availability of the assessors on time. So the assessment of those particular managers has not been as per the exact research plan.

- The required level of EI competencies for the various nature of jobs done by the professionals (like say design engineers, maintenance engineers, doctors, finance professionals, IT professionals etc.) are not assessed in this study.

- In some cases the exact timing of assessments as per plan could not be adhered to due to some unavoidable reasons. Effort has however been made to organise the “assessments by the respondents” as accurately and timely as possible.