Chapter III

Methodology

3.1 INTRODUCTION

Training objectives of many manufacturing industries varies from organization to organization. The objectives of training from till 1980s was bringing awareness about safety at workplace, technical knowhow, reducing the waste, dos and don’ts during the process, reducing the absenteeism, to bring awareness about the labour laws and employee benefits etc. From 1980s to 1990s training objectives extended rationale included Motivation, Team Building, Transaction Analysis, How to use Safety Equipment and work safe, How to improve performance and productivity. From 1990s companies started considering employees as one of the asset hence, new and innovative training activities were started. In Nutrine Confectionery Quality of Life and Quality of Work was coined and conducted for all the Employees along with their spouse. The theme of the training was “If an Employee was happy and contended in his Family life, he will definitely prove to be an asset to the Company”. For executives behavioural training objectives were to improve Supervisory Skills, Communication Skills, Motivation Skills, Transactional Analysis, Presentation Skills, Leadership Skills and Selling Skills and Technical Training objectives include How to improve productivity, How to improve the efficiency on continuous Lines and How to manage PLC systems. There are extensive researches on training including both quantitative and qualitative. Almuth McDowall et al. (2010) opined that training perceived as more successful when its focus is more on job related skills and return on investment. Dennis G Armstrong (1996) stated that training exercises should be tied with job-specific skills to meet the individual and business objectives.

Ahmed Al-Athari (2001) revealed that most of the organizations are not evaluating the training effectiveness even though it was considered to be the most
important in training process. The evaluation instrument needs to be designed by focusing on objectives of the organization.

The primary objective of the study is to investigate the various factors affecting the effectiveness of training and its relationship with the overall performance of the organization. The overall research was divided into three studies comprises of both qualitative and quantitative research. To identify the research gap both primary data and secondary data was used.

3.2. STUDY 1

Study 1 was a *qualitative research* and divided into *two parts as Study 1A and Study 1B*. Study 1A consists of a Case Study on Nutrine Confectionery Company and its Teaching Notes and Study 1B consists of training evaluation practices in large manufacturing companies of Chittoor District. Four propositions were identified basing on the Kirkpatrick training evaluation model and extensive research on training evaluation. The data collected using Focus Group Discussion from HR practitioners and academicians were used to arrive at the findings.

3.2.1. STUDY 1A

3.2.1.1. Research Design

Case writing method was used to identify the real time problem (occurrence). The researcher had an opportunity of being a part of the organization by his profession as an Associate Vice President. Once he started writing a case he started acting as a video camera to capture the facts.

3.2.1.2. Data Collection

The case was developed using both primary and secondary data. Primary data was collected through personal interview, observation and focus group discussion where as Secondary data was collected through company records, journals, magazines, books and internet.
3.2.1.3. Sampling Method

Nutrine Confectionery Company was selected basing on the convenience and availability. The researcher approached various large manufacturing companies of Chittoor District, but the Management was reluctant to neither share their problem nor not ready to give the case clearance certificate.

3.2.1.4. Analysis

The problem of the organization was: In December, 2012 Hershey India Pvt Ltd cancelled the joint venture it had with Godrej, Godrej Hershey India Limited, under which Nutrine Confectionery Company operated, making it a full subsidiary of Hershey’s. Mr. B. Giasuddin, Associate Vice President Operations, conducted a financial review and found that the manufacturing cost of Nutrine products was INR 38 per kilogram, whereas the cost of production of competitors for similar products was INR 18 to 20. The top management of the company was in a dilemma whether to continue the production by redesigning the training and implementing training evaluation, or to stop the production by giving the production to a third party. Teaching Notes was developed to analyse the case.

3.2.1.5. Focus Group Discussion

Focus Groups were used to examine the ‘effect’, researcher will not be interested in what people thought but will be interested in how they thought and why they thought and many focus group studies rely on no more than 4 or 5 groups, and this may be a perfectly adequate number when working with particular population (Jinny Kitzinger, 1994). Conducting and collecting data through focus group method was not new. During 1920s it was first mentioned as market research technique (Basch 1987; Bogardus 1926). In 1950s People’s reactions to wartime propaganda was examined by Morton (Morton et al. 1956). In 1970s and 1980s group discussions were popularly used as data collection.

3.2.2. STUDY 1B

There was a mismatch between organizations desire to evaluate training and the extent and effectiveness of actual evaluation. This study concentrates on understanding “Training Evaluation in Large Manufacturing Industries” and identifying the bottlenecks in implementing the Kirkpatrick training evaluation model.

Kirkpatrick presented a training evaluation system, which probably known as best in training circles (Steve Dyer, 1994). Kirkpatrick & Kirkpatrick (2006) stated that greater part of HR practitioners did not have enough familiarity of Kirkpatrick’s model of evaluation. In a recent paper, Sorad Sadri (2014) analyse the ‘Kirkpatrick’s training evaluation’ in organizations published over the past 40 to 50 years isolating the four propositions which they encapsulate in ‘implementing Kirkpatrick’s four level training evaluation model’ (Kirkpatrick, 1959, 1975, 1998 and 2006). The four propositions are:

3.2.2.1. Method

Complexities associated with implementing training evaluation: Evaluating reactions after training were easier and cheaper when compared to evaluating learning, behaviour and results (Kirkpatrick, 1959, 1975, 1998).

Following Kirkpatrick (1959, 1975, 1998); Morten Emil Berg et al. (2011) and Sorad Sadri (2014), I selected respondents from HR practitioners and academicians that satisfied the following criteria:

1. Importance of Training evaluation: HR practitioners who were been in training and development and implementing and implemented training evaluation from minimum of 10 years and maximum of 50 years. HR Academicians and consultants who have experience in training and development and training evaluation.

The HR managers of various large industries were approached and asked to direct me to colleagues and subordinates that were engaged in implementing training evaluation
and satisfying our criteria to participate in the focus group discussions. A brief
description of our research aims the experience the respondents had in training and
development and implementation of training evaluation need to examine so that each
research participant of FGD will fully understood the reason for focus group discussion.
Then the researcher ensured that they were willing to be part in the FGD for about two
hours. The respondents were chosen from a variety of industry sectors in order to obtain
data that were not sector specific. Each FGD was ranged from minimum one and half
hours to three hours. Each FGD was tape recorded with the respondent’s agreement.

3.2.2.2. Propositions:

1. Measuring the thought and feeling of trainees was easy, needs less effort and
cheaper hence majority of the companies are evaluating immediate reactions after
training.

2. Measuring level of knowledge and capabilities after training also was easy, needs
less efforts and cheaper when compared to measuring behaviour and results hence
majority of the companies are evaluating immediate learning after training.

3. Measuring the extent of behaviour, capabilities improved and
implementation/application of learning from training was difficult, requires more
efforts and costlier when compared reactions and learning and vice versa with
respect to results hence few companies only are evaluating behaviour .

4. Measuring the effects on the business or environment resulting from the trainee’s
performance was difficult, require more efforts and costlier when compared to
measuring reactions, learning and behaviour, hence very few companies are
evaluating the results.

3.2.2.3. Analysis:

The tape recorded FGDs were first transcribed into ordinary word processing
files. The transcripts were studied later and all clauses pertaining to Kirkpatrick four
propositions were isolated. Three raters’, working independently of each other, then
compared these clauses with Kirkpatrick’s ‘ease and difficulty in implementing training
evaluation’ propositions. A pair wise comparison yielded inter-rater agreement of 85 per
cent. Disagreements were resolved jointly between the three raters.
Each of Kirkpatrick’s (1959, 1975, 1998) ‘ease and difficulty in implementing training evaluation’ propositions was set out in full below, followed by our observations on their training evaluation practices.

3.3. STUDY 2

The purpose of the study is to understand “the Executives’ perception on the outcomes of in-house and outdoor training programmes.” It is important to understand the demands of a job and the background of the learners in order to provide training, which meets specific needs. At present both in-house and outdoor trainings are being conducted to executives to persuade their deeds and mind-set in the direction of the Organization. The success of the training program depends on the training outcomes. By studying these factors the company can evaluate the future need of training and development plan and also in selecting the right training programs for executives.

Activities involving more physical extortion and brain storming may provide opportunity to learn more managerial skills (Chapman & Lumsdon, 1983). It deals with how both mental physical exercises helped in enhancing their skills like; communication, adapting to situations, team work, taking responsibility working to deadline and identifying their own leadership style (Pollitt, 2011). The learning from outdoor training helps the ordinary people to sustain in changed environment and develop the skill to become successful (Smith et al., 1997). Outdoor trainings improve individual and group behaviours. It encourages participants towards self/own learning. It also focuses how virtual reality activities develop insights in individuals and groups (Wagner et al., 1994). To study the executives perception on the outcomes of both in-house and outdoor training programmes the following Hypotheses were formulated.
3.3.1. Hypotheses:

$H_{1a}$: There is no significance difference in the executives’ perception on skill development.

$H_{1b}$: There is no significance difference in the executives’ perception on team building development.

$H_{1c}$: There is no significance difference in the executives’ perception on training relatedness.

3.3.2. Research Design:

This study designed at developing a reliable and valid scale for measuring executives’ perception on training outcomes. The scale development procedures proposed by Hinkin (1998) and Churchill (1957) used to meet the objective. The research was organized in three phases.

3.3.2.1. Phase 1: Instrument Development

The questionnaire was designed with 20 items which captures the effects of training and items were identified from various earlier studies and assessed with face and content validity by the subject and industrial experts.

3.3.2.2. Phase 2: Pilot study of the Instrument

A pilot study was conducted initially to check ambiguities and communication errors with a limited sample. The structured questionnaire was administered through online. The total number of executives in Nutrine Confectionery (all over India) was 180 out of which, 74 executives responded to both questionnaires, which comprised the sample of our study. Hence it is a representative sample. Subjects were asked the questions related to perception of executives: “in-house training increases self awareness, self confidence, inter-personal skills, etc.”? They were also asked to rate “outdoor training increases self awareness, self confidence etc.” on a seven point Likert scale (1-lowerst and 7-highest).

3.3.2.3. Phase 3: Exploratory Factor Analysis and MANOVA

EFA used to take large set of variables and reduce them to smaller and retains as much of the original variance as possible. Exploratory factor analysis was a research tool.
for refining measures, evaluating construct validity, and in some cases testing hypotheses. Researchers do make interpretations regarding constructs rather than purely reducing data (James M. Conway and Allein I. Huffcutt, 2003). It was a common tool used in organizational research (Ford, MacCallum, & Tait, 1986). Researchers tend to make poor decisions about factor extraction model (i.e., principal components rather than common factors), criteria used to decide and retain the factors was eigenvalues greater than 1. Oblique rotations were more superior to orthogonal rotations but found that about 80 percent of researchers using orthogonal rotations. Ford et al. (1986) recommended to use common factor model rather than principal components, multiple number-of-factors criteria, and oblique rather than orthogonal rotations for higher quality EFA decisions.

EFA primarily focus on three decisions; the factor extraction model, number of factors retained and method used to rotate factors. The extraction models were most categorized as common factor model or a components model (Gorsuch, 1983). Of components model, most popular was PCA, where as among common factor models, maximum likelihood, principal axis factoring with estimated communalities are popular. The common factor model understands the latent (unobserved) variables that account for relationships among measured variables where as PCA simply reduce the number of variables by creating linear combinations.

Factor analysis is used to find out the inexplicable or unexplained factors that influence the co-variance among multiple observations. Exploratory Factor analysis (EFA) is adapted (Hinkin, 1998) to find out the training outcome constructs for both the in house and outdoor training. These items were tested through item-to-total correlation for in house and outdoor training respectively. To group the training attributes/outcomes outdoor training responses are taken into consideration because the high alpha value and number of dimensions related to training outcome constructs.

The factor analysis results for the training attributes / outcomes explain through KMO, and Bartlett’s test values are - Chi-Square, degree of freedom and significance level. The exploratory factor analysis results used to measure the individual factor variance and total variance.
The MANOVA and Univariate F-test with descriptive statistics for the total sample of 74 executives of confectionary company is presented. The results of MANOVA’s four tests, especially Wilks’ Lambda (Wilks’ Λ), F value, degree of freedom, significance value are calculated to measure the significant difference in executive’s perception on training outcomes: skill development, self-development and training need relatedness of in-house and outdoor training programmes.

3.4. STUDY 3

Measurement of training effectiveness on overall performance of the organization

How far the training and evaluation practices match with the Organizational objectives is a big challenge? The Organizations should also identify how far the training programs and reasons for ineffective evaluation practices or barriers of effective evaluation practices are influencing in meeting the Organizational objectives (Philip Lewis and Adrian Thornhill, 1994). Basing on the Kirkpatrick (1979) Trainer performance and training process have the strongest impact on learning and usefulness. The remaining factors (Training Environment, Training goals, Training content, and Training material) also affect learning and usefulness (at a satisfactory level)- (Diamontidis et al., 2012). Determination of training needs is an important factor in training, so the trainer should ensure that the job roles are properly structured and properly resourced before deciding the training (Chaston, 1993).
3.4.1. Hypotheses:

**H2:** There is significance positive relation of training effectiveness on individual performance

**H3:** There is significance positive relation of training effectiveness on organizational performance

**H4:** There is significance positive relation of individual performance on the organizational performance.

3.4.2. Research Design

This study designed at adapting and modifying a reliable and valid scale for measuring relationship of training effectiveness with overall organizational performance. The scale development procedures proposed by Hinkin (1998) and Churchill (1957) used to meet the objective. The research was organized in **three phases**.

3.4.2.1. Phase 1: Instrument Development

The questionnaire was finalized with 45 items excluding demographic items which capture the items for measuring training effectiveness, individual performance and organizational performance from adapted scale and from various earlier studies and assessed with face and content validity by the subject and industrial experts.

3.4.2.2. Phase 2: Pilot Study of the Instrument

A pilot study was conducted initially to check ambiguities and communication errors with a limited sample of 50. The structured questionnaire was administered 800 executives of large manufacturing industries of Chittoor through systematic random sampling. Out of 800 executives, 464 executives responded and filled the questionnaires, which comprised the sample of the study. Subjects were asked the questions related to training effectiveness, which includetraining objectives, training course content, facilities and equipments of training, trainers’ capabilities and opportunity for application. The questionnaire also includes items relating individual performance and overall organizational performance on five point five Likert scale (1-Strongly Agree and 5-Strongly Disagree). The sampling details are given below.
Table 3.1: Sample details

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Company Name</th>
<th>Number of Executive Selected as a Sample</th>
<th>Number of Executives Responded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amara Raja Electronics Ltd.</td>
<td>300</td>
<td>180</td>
</tr>
<tr>
<td>2</td>
<td>Nutine Confectionery Pvt. Ltd.</td>
<td>92</td>
<td>72</td>
</tr>
<tr>
<td>3</td>
<td>Hindustan Coca cola beverages Pvt. Ltd.</td>
<td>108</td>
<td>72</td>
</tr>
<tr>
<td>4</td>
<td>Lanco Industries Ltd.</td>
<td>150</td>
<td>72</td>
</tr>
<tr>
<td>5</td>
<td>Balaji Dairy</td>
<td>50</td>
<td>24</td>
</tr>
<tr>
<td>6</td>
<td>Sri City</td>
<td>100</td>
<td>46</td>
</tr>
</tbody>
</table>

3.4.2.3. In Phase 3: Structural Equation Modeling

Structural Equation Modeling has its roots in Path analysis of Sewal Wright (Wright, 1921), where boxes represent observed variables (measured) and circles represents latent factors (unmeasured). Single headed arrows represent regression coefficients and double headed arrows indicate the covariance. The extensions of this notation developed to represent variances and means (cf. McArdl, 1996). In exploratory factor analysis the model was arbitrary: all variables load on all factors where as in path diagram represent hypothesis about the factor structure and these models are called restricted or confirmatory factor analysis. In structural equation modeling the confirmatory factor model was imposed on data. Its first purpose was to obtain estimates of the parameters of the model i.e. factor loadings, the variances and covariance’s of the factor and the residual error variances of the observed variables. The second purpose was to assess the fit of the model i.e. to assess the goodness of fit of the model to the data.

To get better the psychometric measurement properties of the 45 item, a series of confirmatory factor models (CFA) were estimated using LISREL 8.5 by maximum likelihood method. The CFA model fit indices for all the dimensions of training effectiveness i.e. training; objectives, course content, facilities and equipments, Trainers’ capabilities and opportunity for application were at the acceptable threshold levels. The individual performance and organizational performances fit indices were also at the acceptable threshold levels.