CHAPTER 7
FINDINGS, CONCLUSIONS AND SUGGESTIONS

This study examined Kirkpatrick’s training evaluation model (Kirkpatrick & Kirkpatrick, 2006)(1). The research question and four hypotheses, as stated in the previous four chapters, served as the foundation and purpose of this study. They also served as the guides for the findings of the study, suggestions, and scope for future studies addressed in this chapter.

Findings and Suggestions

The study by assessed the training program conducted at an organization in the leading thermal power plant, i.e. Public sector- Feroze Ghandi National Thermal Power Corporation Limited, (NTPC) And Private sector- ROSA Thermal Plant, which is hold by Reliance Corporation Limited and the data were retrieved from five departments, namely- purchase, finance, township development, planning and system and human resource management department. The specific time period to be studied was the two-and-a-half-year period of July 2013 to December 2015 for NTPC and from June 2013 to December 2015 for Rosa Plant. The study assessed the employees’ training outcomes of knowledge and skills, job performance, and the impact of the training upon the organization (productivity, retention ratio, and innovation). The research will assess the training outcomes and their relationships.

The population for this study was taken from employees of executive and subordinate level. During the study period, there were approx 800 employees’ were employed in Rosa thermal plant and 11000 employees’ in NTPC. The employees’ who completed the training program and for whom complete pre-and-post training data were available were the sample of this study. The number of employees’ available was 109 for Rosa plant and 180 for NTPC.

The training intervention was a two and one-half day, some are one day, three days to seven days respectively classroom-based and technical and non-technical comprehensive courses for employees’. The basket training programs are conducted time to time according to the need of employees’ and of the organization. The study taken training program for which pre and post data are available were:- the Technical & Management Training, MS Office, Programming in C,
and Power Plant Training, Employee Development Training, Energy Development and Management Training, as the measurements of productivity and creative thinking, problem solving and core value actualization as measurement of increased organizational effectiveness. The main objectives for thermal power plants is to provide a platform for the top Experts in Power Sector and power plant operators for knowledge exchange and resolving related problems and to identify challenges, develop common solutions and initiate joint action plans for power sector. Moreover, to engage pro-actively with foreign organizations such as VGB Germany, for Technical knowhow, Expertise, Consultancy, Studies and Reviews. Therefore, due to the changes in business climate and the continuous increasing competition, the thermal power plant recognized the significance of the employees’ who deliver the first impression to their organizational effectiveness and have direct impact on their bottom lines. Consequently, a training program/intervention has been delivered to the employees’ to provide the skills and ultimate performance to meet their new business objectives. The training was conducted by the learned learning coach (facilitator) from IIM professor to IIT to renowned training centers and even from abroad.

Length of employment was found to be significantly different when comparing the different departments of the employees. This was reflected in the job titles as there were more inexperienced in programming in C and critical thinking in NTPC than in Rosa plant, while core value actualization and problem solving in Rosa plant than in NTPC. It implies that the thermal power plant all level employees for training time to time as need arises irrespective of year of employment moreover wanted newly hired employees’ went through the training first.

**Hypothesis findings and Suggestions**

This study was guided by the research question: “Do the data from a training program implemented at Thermal Plant support for organizational effectiveness?” The data were available for examining by the three higher levels of Kirkpatrick’s evaluation model (Kirkpatrick & Kirkpatrick, 2006). Four research hypotheses were the guides for the data to be collected and analyzed, and to ultimately answer the research question.
The main research question focus on effective organizational effectiveness

Do the data from a training program implemented at an organization in the Thermal Plant support for organizational effectiveness? The results of this study supported the four hypotheses and, therefore, also supported the research question. The data from the training program implemented at an organization in the Thermal Plant, and described in this study, supported the hypotheses in this study.

The results for each hypothesis are summarized below in subsequent paragraphs:

Hypothesis one ($H_1$). Employees who completed the training improved their knowledge of the content and required skills (Level 2). To answer research hypothesis one, the study examined the corporate basket training assessment scores two months before and the average scores two months after the training intervention. This assessment measured the employees’ knowledge and skills in corporate basket training. Utilizing the Plant’s scoring criteria; the senior HR executive randomly reviewed a selection of each employee’s record each month. The significant improvement in the employees’ learning in both NTPC and Rosa Plant supported hypothesis one that the employees who completed the training improved their knowledge of content and required skills in handling technical and non-technical work (Level 2).

Hypothesis two ($H_2$). Employees who completed the training improved their job performance (Level 3). To answer research hypothesis two, the variables to be examined are the Technical & Management Training, MS Office, Programming in C, and Power Plant Training, Employee Development Training, Energy Development and Management Training, as the measurements of productivity. The Technical & Management Training is important in Level 3, job performance, because the Technical & Management Training is not only a job performance measurement, but also a business survival indicator. To successfully execute the work, the respective department employee’s have to apply their knowledge about machineries, the services, the various equipments, etc., and also their listening, interpersonal, and relationship skills. Rosa thermal plant show more significant in this having p-value= .001 while the mean increase of both the plant was same (0.21). Energy Development and Management Training is also a key job performance measurement of productivity which indicated that the employees spend doing
specific tasks and should be measured to identify the results/outputs. Both the plants score p-value as .001, which proves to be very significant but Rosa plant score more effect size(0.43) than NTPC (0.33).

NTPC score .001 as p-value in power plant training and employee development training with highest effect size of 0.44 and 0.46 respectively while Rosa plant score (p-value= .002, d= .32) for power plant training and (p-value= .013, d= .13) in employee development training. Whereas in the rest variables NTPC score higher effect value than Rosa which shows training impact higher and more effective.

The technical & management training and Energy Development Training are important in Level 3, job performance, because they measure the job performance on the length employee capability and knowledge in handling computers with every increase in technical enhancement. To efficiently use the time, the employee’s should optimize their knowledge and develop their individual skills, capabilities and groom themselves so they would be able to handle work efficiently. As a result, hypothesis two was accepted in part with Technical & Management Training, Energy Development and Management Training, The Power Plant Training improved significantly, but the programming in C did not show significant improvement.

Hypothesis three (H₃). To answer research hypothesis three, the employee’s who completed the training contributed to increased organizational effectiveness (Level 4), three measurements were conducted. First, the creative thinking which helps to improve the creative performance of the overall team. Creative meetings are a great opportunity to spot gaps of others as well as seeing your own creative shortcomings. After the meeting, the inventory helps to what you saw (or didn’t see) and get to work filling those gaps. Moreover helps push one own idea for another person’s concept. The data show that NTPC score higher effect size (d= 0.22) than in Rosa (d= 0.19).

Second, problem solving which helps in good problem solving skills as the problem encounters. There is no one way in which all problems can be solved therefore it would be wonderful to have ability to solve all problems efficiently and in time without much difficulty. A simple and structured approach to problem solving build interpersonal relationships and business, which will
Contribute to increased organizational impact. The data shows that both NTPC and Rosa plant score p-value (p= 0.001) but Rosa having more effect size (d= 0.51) than in NTPC (d= 0.41).

The third measurement is core value actualization which is the engagement and empowerment of employee’s education, development and participation in value implementation efforts, which further helps in eliminating obstacles, challenging existing processes, creating value facilitating mechanisms and integrating value into human resource management practices. This framework explains how to embed a new value into a core value system of an organization. The statistics shows the mean increase in 0.02, with effect size of 0.32, having t value 0.08 and p value 0.012 for Rosa plant while the mean increase in 0.06, with effect size of 0.44, having t value 4.01 and p value 0.001 NTPC. This demonstrates a significant organizational impact of the training investment. Thus, the significant improvement in problem solving and core value actualization supports hypothesis three, which the employees’ who completed the training contributed to increased organizational impact (Level 4), i.e., made significantly more productivity of the organization and lower retention ratio moreover increase employee engagement and innovation. Thus, hypothesis three is accepted on both the plant.

**Hypothesis four (H4).** Employee learning (Level 2) and job performance (Level 3) will predict organizational impact (Level 4). To answer research hypothesis four, the differences from pre to post training on the learning, performance and impact variables were utilized for correlations and multiple regression analyses. Hierarchical regression analyses were performed to test that Level 2 employee learning and Level 3 job performance (technical & management training, power plant training and energy development training) will predict Level 4 organizational effectiveness (corporate effectiveness). The employee learning variable was examined for Level 2. Three additional job performance variables (technical & management training, power plant training and energy development training) were also examined for Level 3.

The study found that, in the first block entered into the regression equation, Level 2, employee learning ($\beta = .237, p < .05$) in Rosa plant and ($\beta = .347, p < .05$) in NTPC contributed unique variance to the prediction of organizational effectiveness ($R^2 = .027, p < .05$) and ($R^2 = .019, p < .05$) simultaneously in the regression equation. In the second block entered into the regression equation, after controlling for employee learning, technical & management training ($\beta = .903, p < .001$) contributed additional variance to the prediction of the increase in organizational impact.
\(R^2 = .809, p < .001\) in the regression equation in Rosa Plant whereas in NTPC, employee development training (\(\beta = .923, p < .001\)) contributed additional variance to the prediction of the increase in organizational impact (\(R^2 = .839, p < .001\)) and power plant training (\(\beta = .526, p < .001\)) also contributed variance to prediction of corporate effectiveness. On the other hand, power plant and energy development training did not make a statistically significant contribution to the regression equation in Rosa plant. And energy development training in NTPC was not significant in the model, hypothesis four was accepted.

### Research findings and Suggestions

This study provides the groundwork for additional research into the effectiveness of training programs on corporate by using Kirkpatrick’s model as a whole, and also for each level, particularly Level 3. The findings from this study support the main body of the research i.e. corporate effectiveness. The research findings, suggestions and the empirical links are addressed as the following.

**Level 1.** Participant reaction (Level 1) evaluation provides a basis for developing a balanced set of measures that can improve facilitation and program implementation, and if there is predictive value in the measures. The measurement instruments usually request comments about the training content, materials, instructors, facilities, delivery methodology, etc. Kirkpatrick (Kirkpatrick, 1959a; Kirkpatrick & Kirkpatrick, 2005, 2006)\(^{(2)(3)(1)}\) strongly recommended obtaining candid responses by using anonymous reaction sheets where the trainees are not required to identify themselves or sign the forms. Holton (1996)\(^{(4)}\), one of the most critical of Kirkpatrick’s model, contends that reactions should not be considered a primary outcome of training, believing that favorable reactions and learning are not necessarily related (Holton, 1996; Holton & Naquin, 2004)\(^{(4)(5)}\). Kirkpatrick emphasizes that Level 1 is important because positive reactions to a training program may encourage employees to attend future programs. In contrast, negative comments about the program may discourage learners from attending and/or completing the program.

In this study, the corporate basket training was given to the employees of Rosa and NTPC thermal plant. Level 1 evaluation was done primarily by filling up the questionnaires by the employees’ of the plant. The Level 1 data for this study presented a challenge to examine the
employees’ reactions relate to Levels 2, 3, and 4, and to provide complete recommendation for program improvement. Favorable reactions to training do not guarantee that learning (Level 2), performance (Level 3) has occurred, the data therefore been tested statistically. While interests in accountability and higher levels of evaluation, future research of training program can conduct Level 1 evaluation with different parameters and variables. It also a key source on how to improve future training programs (Kirkpatrick, 1998, p. 17). Level 1 evaluation should be included to thoroughly examine its predictability for Levels 2, 3, and 4.

Level 2. Kirkpatrick’s Level 2 is content evaluation, the examination of whether employees changed attitudes, improved knowledge, and/or increased skills as a result of participating in the program (Kirkpatrick & Kirkpatrick, 2006). It is evident in the literature that Level 2 evaluations are still one of the most popular forms to evaluate the training program effectiveness despite research that does not support that acquired knowledge and skills equates to behavioral changes on the job performance (Bersin, 2003; Strunk, 1999). However, Kirkpatrick stressed that evaluating learning is important. Without measuring learning, no change in behavior can be validated.

Therefore, one of the major reasons for measuring learning is to determine whether learning is transferable to the job. In this study, the employee learning and development variable was used for measuring Level 2 learning performance. The positive improvement of learning was detected and helped to explain and predict Levels 3 and 4 results. The implications for the future research are to continue measuring Level 2 performance with different variables.

Level 3. It measures employees’ job performance by determining the extent to which employees apply their newly acquired knowledge and skills on the jobs. This level is critical, as it addresses the issue of learning transfer. If employees cannot apply what they learned to their job, the training effort cannot have an impact on the organizational results (Level 4). No results can be expected unless a positive and measurable change in behavior (performance) occurs. In this study, the identified job performance variables were the Technical & Management Training, MS Office, Programming in C, and Power Plant Training, Employee Development Training, Energy Development and Management Training, as the measurements of productivity. The research findings indicated that Technical & Management Training, Energy Development and Management Training, The Power Plant Training improved significantly, but the programming in C did not show significant improvement in NTPC. However, programming in C and employee
development training did not show significant improvement in Rosa plant. Nonetheless, it still demonstrated partial job performance improvement and established the link between Levels 2 and 4.

**Level 4.** It is the most important and also the most challenging level to assess (Werner & DeSimone, 2005; Kirkpatrick, 1960b; 1998; Phillips, 1996a)\(^{(9)(10)(11)}\). It is critical for programs designed to influence impact measures such as output, quality, cost, and time (Phillips, 2003b)\(^{(12)}\). It is also frequently found in the literature is that the most important barrier to training evaluation is impact factors on the organization. As identified in this study, the effectiveness on corporate. In some cases, there would be costs on the training materials, the employees’ salaries, and learning coach’s (facilitator’s) fee, travel, accommodations, facility usage, etc., where the study can be done.

American Society for Training and Development’s (ASTD) 2009 report estimated that U.S. organizations spent $134.07 billion on employee learning and development in 2008 (Paradise & Patel, 2009)\(^{(13)}\). The average annual expenditure per employee in the ASTD’s sample organizations increased to $1,103 per employee in 2007, an increase of 6 % from 2006 (Paradise, 2008)\(^{(14)}\). The finding in 2008 was slightly down 3.8 % from the 2007 level to $1,068 (Paradise & Patel, 2009)\(^{(13)}\).

In addition, Kirkpatrick and Kirkpatrick (Kirkpatrick & Kirkpatrick, 2005, 2006)\(^{(2)(1)}\) stressed that obtaining objective measures, such as sales per trainee or sales to quota, to measure results is administratively infeasible and difficult, because factors other than the salesperson’s efforts can have an influence on sales volume. However, the attempt is still crucial as the Level 4 results are often used to justify the existence of the training department and to decide whether to continue or discontinue training programs. In this study, the corporate effectiveness as identified as the Level 4 result showed a significant increase after the training (production, retention ratio, innovation).

As shown in this study, by examining the increase in corporate effectiveness after the training, the results not only demonstrate the value, but also validate the program. A single use or snapshot result may not be reliable, but continued refinement of the process can increase its credibility as a part of the evaluation. The framework developed through this research should be considered for further research.
Scope for Future Research

The implementations and findings from this study should be an encouragement for the thermal plant to further investigate their training endeavors in different segments and areas. Every business should consider implementing evaluation model by identifying their unique critical levels of performance, eliminating or modifying ineffective programs, ensuring training money are spent wisely, and enhancing the impact of the organizational effectiveness.

Because corporate basket training is a combination of multiple trainings at an organization, a single level of measurement of training will not provide a comprehensive picture of the program. Similar studies should be considered at different thermal plants across different regions of the world. Within thermal plants, this study could be replicated in other units such as different NTPC units, TATA thermal plants, etc.

Besides replicating a similar study with similar training program, different delivery methods and scheduling formats should also be considered for future research. Since the emphasis in today’s thermal plants is on both productivity and service, the future research could investigate whether the same material is being placed in an on-line format or blended format remains just as effective and whether going through the entire training via smaller sessions make any difference.

A comprehensive evaluation of corporate training programs, as demonstrated in this research, is difficult to conduct. With the advancement of computer technology and the acknowledgement of the importance of data acquisition and management, every thermal plant should collect performance data on different levels so comprehensive analysis can be performed. More studies of corporate effective practices are needed to document processes and procedures for designing and implementing these evaluations.
Concluding Remarks

This research was an initial attempt to develop an extensive training evaluation system to assess corporate effectiveness in thermal power plant i.e. Public sector- Feroze Ghandi National Thermal Power Corporation Limited, (NTPC) And Private sector- ROSA Thermal Plant, which is hold by Reliance Corporation Limited.. The objective was to provide the first fully implemented study to investigate correlations among training provided and corporate effectiveness. Although it was not the objective of this study to provide instruments that could be used for all types of training, the assessment of these particular instruments could provide insight for other training professionals attempting to design effective evaluation instruments in their particular field. While this study hopefully contributed to the research of training programs on corporate effectiveness, more research is needed to fully understand the drivers for increased accountability and the conditions under which appropriate evaluation can take place.

References


