



Effectiveness of Health, Safety, and Environment Training Courses Using the Kirkpatrick Model and Providing Managerial Solutions for the Staff of Sinadarou Company

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ABSTRACT

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Background & Objective: Health and environment safety training is internationally recognized as the most important principle for reducing the material and human costs of occupational accidents and diseases. Therefore, studying the effectiveness of this type of training is of utmost important. The present study aimed to assess the effectiveness of specialized courses on safety, health, and environment training in Sinadarou Labs CO. using the Kirkpatrick model.

Materials and Methods: The training course was implemented in 2011 and evaluated as pilot. The course was based on four indices in the Kirkpatrick model, including the responses of learners to the course, level of learning, level of changes in the behaviors of learners, and training outcome.

Results: Considering the important components of training, the learners had an optimal response to the course. In addition, the training course could optimally increase the level of knowledge in the learners. The changes in the behaviors of the learners were also desirable, and managers had a positive view toward using the skills provided in the training courses.

Conclusion: According to the results, the training course had a favorable effect on the staff in terms of the aforementioned indices.

Evaluation, Effectiveness of
Training Course, Kirkpatrick
Model, Sinadarou

Introduction

Since efficient human resources are considered to be the most valuable asset to every organization, most investments are focused on human resources (1). The efficiency of organizations is directly correlated with the efficiency of human resources. The efficiency of human resources depends on training and development of knowledge and skills in staff, which is one of the main approaches to investing in human resources (2). Evidently, organizations with poor human resource systems in terms of applying, employing, improving, and training are not able to have optimal performance (3).

Today, the quality of training and effectiveness of the educational system are major concerns in educational systems and decision-making (4). Staff training is the key to the development of a dynamic and

effective organization (5). A successful organization attempts to maintain continuous training for human resources. Training courses in an organization denotes the high level of maturity and proper attitude of managers toward organizational issues, and the implementation of training courses results in the development of management and dynamics in the organization (6).

Development of organizations and institutions depends on promoting the knowledge, skills, and insight of human resources. Education is an efficient tool to meet the needs of learning organizations. In addition to growth and development, education could be a process through which the required experiences, knowledge, and skills for the proper implementation of duties and responsibilities are transferred.

As such, leading institutions and organizations have focus on the

implementation of training courses and human resource improvement (7).

Various patterns have been proposed by experts to evaluate the effectiveness of training, including objective-oriented patterns, DePhillips patterns, and Kirkpatrick model. Each of these patterns is used to evaluate the effectiveness of training courses from various aspects. In this regard, the Kirkpatrick model is recommended as the most comprehensive approach for the evaluation of adults (8).

In Iran, evaluation of training courses is performed in a simple manner on the first or second level of the Kirkpatrick model. The only study conducted to assess the effectiveness of training by the Kirkpatrick model was carried out by Omar et al. (2010) (9), entitled the "Evaluation of Education: A Case Study of Health Education Managers in Iran", at the World Health Organization Training Center in Tabriz, Iran. In the mentioned study, the desirability of training courses was evaluated on four levels using the Kirkpatrick model, and the effectiveness of the course was measured. One of the major issues in this regard was the lack of commitment in the staff and managers in education, inadequate evaluation of courses, and the subsequent lack of proper feedback based on the training outcomes (10).

The present study aimed to assess the effectiveness of health, safety, and environment training courses in the staff of Sinadarou Company using the Kirkpatrick model.

Materials and Methods

This descriptive survey was conducted on the staff of Sinadarou Company, and the

study variables were orderly and distant. In total, 382 employees participated in the training courses. Considering the small sample size, a perfect census was used for sampling.

Data were collected using questionnaires, which were completed anonymously. The required data were collected in three sections of response analysis, behavioral changes, and learning rate of the learners.

In the first section, the aim of evaluation was to examine the satisfaction of the learners with the training course, which also indicated their positive responses to the course. Therefore, various indices were assessed in this section, such as the degree of satisfaction with the trainer, place of the training course, manner of reception, and educational contents. Questions in this regard were provided to the learners immediately after completing the course at the training venue.

B. Second Level: A Test to Assess the Learners

In general, the learning rate of the trainees was examined on this level. According to the theoretical principles, learning occurs when there is a change in the knowledge, skills or attitudes of learners. To conduct evaluation at this level, we used the documents available in the company, including the pretest and posttest scores of the participants in the training course.

C. Third Level: Effectiveness of Training

The effectiveness of the training course was evaluated in the practical environment in order to identify the behavioral changes in the learners and examine the extent of

transferred educational contents to the practical environment.

Since the items in the questionnaire were scored based on a Likert scale, the option “Very Much” in all the questions denoted the positive attitude of the respondents toward the particular case. On the other hand, since the questions had five options, scores lower than three in each question showed the negative attitude of the respondents toward the particular case. For instance, one hypothesis encompassed seven questions regarding occupational skills with the cutoff point of 21. This process was also used for the other areas on this level.

Data analysis was performed in SPSS. Data were described using indices such as frequency, percentage, and mean. Moreover, inferential statistics, one-sample t-test, and independent two-sample t-test were used to compare the study groups and determine the significance of the differences.

Results

In terms of education level, 98 out of 382 staff had diploma, 126 had an associate degree, 146 were undergraduate, eight subjects had master’s degree, and four subjects had a doctoral degree. Other demographic data of the participants are presented in Table 1

Table 1. Demographic Data of Subjects

| Variable | Index | Frequency | Percentage |
|------------|--------|-----------|------------|
| Age (year) | 25-30 | 83 | 21.7 |
| | 31-40 | 164 | 43 |
| | 41-50 | 114 | 29.9 |
| | 51-60 | 21 | 5.4 |
| Gender | Male | 291 | 76 |
| | Female | 91 | 24 |

Evaluation of the overall satisfaction of the participants with the training course indicated that 4% were dissatisfied, 7.5% were moderately satisfied, 11% were partly satisfied, 22% were very satisfied, and 55.5% were highly satisfied.

To examine and compare the learning level, we used the mean pretest and posttest scores of the staff. According to the results, the mean posttest scores of the subjects were significantly higher than the pretest scores (Table 2).

Table 2. Assessment of Mean Scores of Learning before and after Training

| Variable Index | Period | Mean | SD | P-value |
|-----------------|--------|------|----|---------|
|-----------------|--------|------|----|---------|

| | | | | |
|----------------|----------|-------|-------|---------|
| Learning Level | Pretest | 36.52 | 15.44 | <0.001* |
| | Posttest | 84.75 | 16.89 | |

*P-value of paired t-test

According to the comparison of the obtained scores with various cutoff points in each area using one-sample t-test after implementing the training course in

Sinadarou Company, behavioral changes were noted to improve the efficiency of the staff (Table 3).

Table 3. Comparison of Scores of Subjects Based on Cutoff Points in Each Area

| Area Index | Mean | SD | Statistical Test | P-value |
|------------------------------|-------|------|------------------|---------|
| Occupational Skills | 22.73 | 5.06 | 4.82 | <0.001 |
| Order and Precision in Job | 9.98 | 2.52 | 5.48 | 0.003 |
| Cooperation | 9.80 | 2.33 | 4.87 | 0.004 |
| Job Satisfaction | 17.13 | 5.90 | 5.10 | <0.001 |
| Occupational Problem-Solving | 23.18 | 5.44 | 5.66 | <0.001 |

Discussion

According to the results of the present study, the staff had high satisfaction with the provided training course. In total, 77.5% of the participants were satisfied with the training course. Although the educational satisfaction was not 100%, it could be claimed that the training course was of high quality in terms of volume. In a study conducted in Hojjatiin Jorjani Hospital in 2012, satisfaction with education was 85%. Various studies have also reported the satisfaction of individuals with the training courses based on the Kirkpatrick model on the first or second level; such examples are the studies by Mohan et al. and Harvandi et al. (11, 12).

Comparison of the learning level before and after the training in the current research

indicated a significant difference between the mean scores of the subjects (P=0.01). Accordingly, the mean pretest scores of the subjects were lower than the mean posttest scores. Therefore, it could be argued that the training course implemented at Sinadarou Company enhanced the learning level of the staff. This finding is consistent with the results obtained by Harvandi et al. (11). In a research by Nezamian Pour-Jarmari et al., which involved second-level training, the mean change in the knowledge score of the participants was 2.5 out of 5 before and after training, and the difference was considered significant (13).

With regard to the behavioral changes of the staff in the present study, the components of occupational skills, job order and precision, cooperation, job satisfaction, and

occupational problem-solving job were examined. Positive, significant differences

were observed in all the mentioned components. Therefore, it could be inferred that the training course positively changed the behaviors of the staff, which is in line with the findings of Bagheri Hamaneh et al. (14).

Findings of the current research confirmed the effectiveness of the implemented training course using the Kirkpatrick model, which is in congruence with the previous studies in this regard. For instance, the study by Hojjati, which aimed to evaluate the effectiveness of in-service training courses for nurses based on the Kirkpatrick model, showed that at the end of the in-service training course, its effectiveness could be measured using the Kirkpatrick model since it properly demonstrated the changes in the learning and behaviors of nurses and nursing managers after the training, which achieved a high index (15)

In another study by Abbassian entitled the "Effectiveness of In-Service Training at Iran Khodro Company Based on the Kirkpatrick Model", learners showed an optimal response to the training course. Furthermore, the training courses optimally increased the level of knowledge and changed the behaviors of the learners. The mentioned

study also indicated that the implemented training course reduced rework by only 13%, which was the objective of the course (16).

In a research in this regard, Akbari et al. evaluated the effectiveness of cardiopulmonary resuscitation (CPR) in-service training course on the first two levels of the Kirkpatrick model. According to the findings, in-service CPR training had an optimal effect, and the Kirkpatrick assessment model was considered suitable to evaluating the effectiveness of in-service training courses for nurses (17).

Conclusion

According to the results, the implemented training course was highly effective; therefore, the managers and officials of Sinadarou Company should incorporate the training course into their agenda through the optimal use of educational facilities and allocating funds to education. Some of the main benefits of in-service staff training are increasing the technical knowledge of staff, reducing resignation and termination of services, decreasing job-related injuries and damages, and improving the job satisfaction of the staff.

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