

# The Impact of Practicing Reaction and Learning in Theory of Kirkpatrick for Training Evaluation

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**Abstract:** *Today, the training of employees and developing their skills and knowledge are becoming an increasingly important requirement for modern organizations. The evaluation of training takes the same importance just like training to ensure the success of training program. This study aims to examine the level of practicing reaction and learning evaluation if training based on Kirkpatrick theory. The study found that most companies evaluate the reaction of trainees with higher degree comparing to learning evaluation. The result showed that the first and second levels of Kirkpatrick evaluation approach (Learning, Reaction) affect the Behavior of trainers in significant multiple linear correlation, and the associations between these two variables and Behavior are positive. It is concluded that assessment of learning skills and knowledge after training is very important just like the the reaction of trainees on the the training program. The study suggests that motivating trainees to learn new skills and knowledge related to their work are highly important to the organization. The study recommends practicing learning evaluation at the same level as practicing reaction evaluation because both of them take the same importance to the organization and should be examined very well before and after the training program.*

**Keywords:** Kirkpatrick theory, Reaction Evaluation, Learning Evaluation

## 1. Introduction

Training is teaching, or developing in oneself or others, any skills and knowledge that relate to specific useful competencies. Training has specific objective such as improving staff's work capability, capacity to do the job, performance and productivity and. It forms the core of apprenticeships and provides the backbone of content at institutes of technology (Trevisani, 2016). In addition to the basic training required for a trade, occupation or profession, observers of the labor-market which imposes many modern organizations to continue training beyond initial qualifications: to maintain, upgrade and update skills throughout working life. People within many professions and occupations may refer to this sort of training as professional development (Jacoby, 2004).

Today, employee training and development are becoming an increasingly important function of HRM as they help organizations to enhance human capital and compete in a rapidly changing business world. Millions of USDs have been spent on employee training programs (Ehlers and Schneckenberg, 2009). Training evaluation is the systematic collection of descriptive and judgmental information necessary to make effective training decisions related to the selection, adoption, value and modification of various instructional activities (Werner & DeSimone, 2006). This definition mentions both descriptive and summative information which are available and equally present in any given training and development intervention (Chimote, 2010).

Effective evaluation is well-planned and reliable. Therefore, organizations must closely study the data obtained from the training evaluation to upgrade the present training programs rather than obtain data just for training evaluation purposes, particularly for organizations who have invested millions of

USDs and will continue investing more in training programs (Abdel-Wahab et al., 2008).

## 2. The Objectives and Significance of the Study

This study aims to achieve the following objectives:

- 1) To introduce the concept Kirkpatrick theory for training evaluation.
- 2) To investigate the effect of reaction and learning on the behaviour of trainers at the end of the training program.

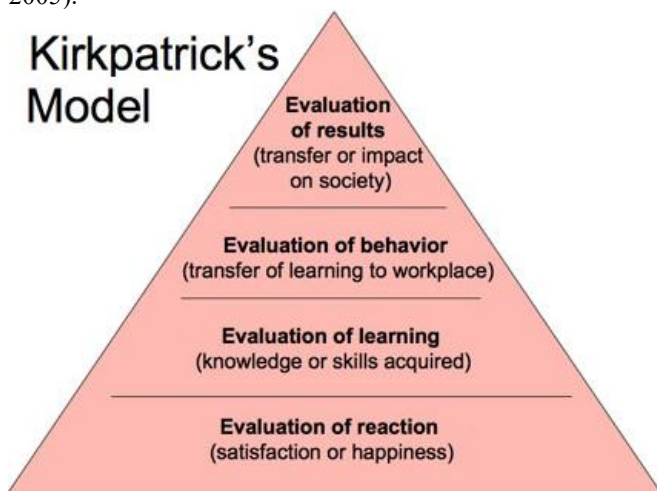
Following the discussion, the researcher presents the conclusion and recommendation. The significance of this study lies in discussing an important theory associated with the continuous improvement of employees' skill and knowledge in a modern organization. This study critically shows the difference between reaction evaluation and learning evaluation within the scope of Kirkpatrick theory which reflects on better implementation of this theory in many organizations so that they are able to compete very well.

## 3. The Theory of Kirkpatrick

The scientist in management Donald Kirkpatrick has written articles on the evaluations of training programs and these articles have been published in 1994 and then were used to establish the original ideas published in the previous 1959 as the famous theory of training evaluation, the model is applied before, during and after training to both maximize and demonstrate training's value to the organization.

The theory of Donald Kirkpatrick (four levels of training evaluation) as shown in Figure-1 below has become the widest theory used for training evaluation and become a popular model for examining the result of training programs

in all kind of organizations without limitation to the nature of business. This theory is the standard and professional method to evaluate the result of training for human resource (Nickols, 2005).



**Figure 1:** Testing the levels of Kirkpatrick Model (Source: Donald Kirkpatrick, 2008)

The Kirkpatrick Model is the worldwide standard for evaluating the effectiveness of training. It considers the value of any type of training, formal or informal, across four levels. Level 1 Reaction evaluates how participants respond to the training. Level 2 Learning measures if they actually learned the material. Level 3 Behavior considers if they are using what they learned on the job, and Level 4 Results evaluates if the training positively impacted the organization.

The four levels of Kirkpatrick's evaluation model essentially measure:

- **Level 1: Reaction:** The degree to which participants find the training favorable, engaging and relevant to their jobs.
- **Level 2: Learning:** The degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training.
- **Level 3: Behavior:** The degree to which participants apply what they learned during training when they are back on the job.
- **Level 4: Results:** The degree to which targeted outcomes occur as a result of the training and the support and accountability package.

All these measures are recommended for full and meaningful evaluation of learning in organizations, although their application broadly increases in complexity, and usually cost, through the levels from level 1-4 (Shamim, 2013). While Kirkpatrick's model is not the only one of its type, for most industrial and commercial applications it suffices; indeed, most organizations would be absolutely thrilled if their training and learning evaluation, and thereby their ongoing people-development, were planned and managed according to Kirkpatrick's model.

Kirkpatrick has presented his theory as a prototype to evaluate training in non-profit and profit organizations for more than thirty years ago. The model has spread largely been used with most of the large and small organizations in

Europe and the United States due to several factors, as follow (Reid, 2004: 341):

**First**, the Kirkpatrick model shows the need for professionals trainers and those who have long experience in the field of training to understand the evaluation of training in a systematic way (Shelton & Alliger, 1993). This model has provided a direct system or new language to talk about the results of the training and the types of information that can be made to evaluate the training program and find out to what extent the training program has achieved its objectives as initially aimed by the managers of and president of the organization.

**Second**, Kirkpatrick insisted that the information on the fourth level (the results) is perhaps the most valuable, which describes the entire training process. Kirkpatrick has focused on the importance of the information contained in the training to assess the training process in a holistic manner and make sure no need to re-training again to improve the results. **Third**, Kirkpatrick theory is a popular method based on four levels which increase the ability of the trainer to simplify training procedure and avoid complex methods in training.

#### 4. The Level of Practicing Reaction

The reaction is the first evaluation level in Kirkpatrick theory. In this level the evaluators measure the reactions of trainees immediately after the end of the training program, and understand their opinions about the training program as a whole as well as about the training material and trainers tools, also the evaluator could know the reaction of the trainees on the means and methods used in the training process. This level is considered the easiest levels and the most common one in Kirkpatrick theory, where some studies indicate that 95% of organizations practice this level (Carla, 2014). Some of the researchers found that organizations are usually evaluating the reaction of trainees immediately after accomplishing the training program because it is easier to measure (Noe, 2010). While other researchers state that this level is more simple to achieve through personal interviews with trainees or conduct general meetings with them or distributing forms to the trainees after the training program to evaluate their reaction to the training programs (Ahmed Kordy, 2011).

The Focus at this level is to look at the trainee and his impression of his training and training in general, as well as how it feels about the trainee instructor and the receptivity of the trainee of the materials provided in the training program. In reaction level to the trainer tries to answer the following questions (Michael, 2008: p12):

- Does the reaction is evaluated comprehensively or with all trainees?
- Are trainees satisfied with the training process and the methods used to transfer the information to them?
- Is the training process helpful to learning and fairly convenient for the trainers so that to attain the desired objectives of the organization?
- Are the trainer's specialists and professional enough to conduct training effectively?

Most companies are assessing the reaction to the interview for the first level of the Kirkpatrick model. According to Ward et al., (2006) 74% percent of companies are doing reaction evaluation practices, and in the same context Noe (2010) found a higher percentage where 91% of the companies are doing reaction evaluation practices through information obtained from the American Society for Training and Development. These polls are important, but they are limited because they do not measure participants' learning. They also measure their reaction to improve their performance at work; or contribute to training programs to improve productivity. While Phillips and Phillips (2009) suggested that modern organizations who intend to measure reactions of the participants in the training program should do it 100% and not neglected any section of the trainees in order to evaluate the accuracy and efficiency of the training program.

Based on the above, the researcher concludes that the reason for high practicing to reaction level according to Kirkpatrick theory because it is easier to achieve and obtain, and urge all organizations to measure the level of satisfaction of participants in the training program as a measure of their reaction towards training, the evaluation of reaction should also investigate the opinion of trainees about the design and method and courses of the training program. The study suggests that the evaluation of reaction should be conducted immediately after the end of the training program or the training session by encouraging the trainees to write their comments or about what they like or dislike. It is further concluded that reaction evaluation is a routine level and a standard method for measuring the level of satisfaction and get feedback from trainees.

## 5. The level of practicing Learning

This is the second level of Kirkpatrick theory in which the trainer collects information from the trainees about the level of knowledge they have acquired as a result of joining the training program. In addition to that this level includes the identification of knowledge, principles and methods, skills and attitudes acquired by the trainees after ending the training. In this level the evaluator depends on practical tests and scientific standards to measure the learning level of trainees. There is no doubt that this level is harder than the first level (reaction) and it is more difficult to define the role and impact of training to change the skills, attitudes and knowledge of the trainees (Ahmed Kordy, 2011).

Michael (2008) argued that this level is mainly important to understand the level of knowledge acquired by the trainee as well as the skills and knowledge and expertise transferred to the trainees. The learning evaluation includes mental and intellectual skills measure and the evaluator tries to know the increase of rational thinking to the trainees.

The trainer is trying to answer the following questions during the evaluation of learning the (Steve, 1994: 31):

- Does the training program enables trainees to increase professional knowledge and skills through training?
- How can the trainer measure the level of improvement in

the knowledge and skills of trainees at the end of the training?

Carla (2014) assess the difference that happened in the knowledge, skills and principles and positions the level of the work and professional techniques for trainees and work environment after the training program ends which is very important to measure the level of cognitive development of the trainees. The trainer must assess the level of knowledge of the trainees and to determine the degree of knowledge and skill that has been developed by measuring principles, facts and techniques acquired by the trainee.

The practices of learning evaluation according to Kirkpatrick theory include the following steps:

- The assessment of scientific and professional knowledge level after the training is completed.
- Measuring skills at work after training is ended.
- Measuring the attitudes of the trainee before and after the training program.
- Applying written tests to assess the knowledge acquired by trainees.
- Applying performance tests to measure the improvement of skills after the training program

Noe (2010) found that most companies involved in practicing the second level (learning) are not doing that at the same level with reaction. Where the percentage of companies that evaluate learning range between 33% - 54%. Noe also believes that the evaluation of learning after the completion of the training is as important as the first level (reaction) and it is a very necessary level that should be accomplished due to a fact that the measurement of learning is necessary to know the level of skill, knowledge in the working environment that could be changed significantly after training. While Phillips and Phillips (2009) emphasized that evaluating learning level of trainees should exceed 60% among companies who organizes training programs frequently.

## 6. Results and Discussion

Multiple linear regression is used to understand whether the dependent variable (Behavior) – third level of Kirkpatrick evaluation approach can be predicted based on the change of the first and second level of Kirkpatrick evaluation approach (independent variables) at once (Learning & Reaction). A Multiple linear regression also allows the researcher to determine the overall fit (variance explained) of the model and the relative contribution of each of the independent variables to the total variance explained. In other words, the multiple linear regression will indicate how much of the variation "as a whole" in (Behavior) can be explained by the variance of (Learning & Reaction), also the "relative contribution" of each independent variable above in explaining the variance.

The result of a multiple linear regression is achieved using the method "Enter" is indicated below:

**Model Summary of Multiple Linear Regression**

This table provides the R, R<sup>2</sup>, adjusted R<sup>2</sup>, and the standard error of the estimate, which can be used to determine how well a multiple regression model fits the data.

**Table 1:** The summary of multiple regression model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.660 <sup>a</sup>	.436	.432	.53596

a. Predictors: (Constant), X2\_Learning, X1\_Reaction

R is the strength of correlation can be considered to be one measure of the quality of the prediction of the dependent variable from the independent variables (Learning & Reaction). A value of (R= 0.660) indicates a high level of prediction by Learning & Reaction to Behavior in the multiple regression model.

R<sup>2</sup> value is the proportion of variance in the dependent variable that can be explained by the independent variables. The value of R<sup>2</sup> reveals the level of interpretation of Behavior through the measurement of Learning & Reaction. Technically, R<sup>2</sup> is the proportion of variation accounted for by the regression model above and beyond the mean model.

As shown in the model summary table, a value of (R<sup>2</sup> = 0.436) that the independent variables (Learning & Reaction) all together explain 43.60% of the variability of the dependent variable (Behavior), which is considered a strong and represent a significant interpretation percentage that shows a considerable level of correlation between the independent variables and Behavior in the multiple regression model of the study. However, it also needs to interpret "Adjusted R Square" to accurately report the data. The difference between adjusted R<sup>2</sup> and actual R<sup>2</sup> is very small (0.04<1). Therefore, the fitness of data is considered high.

**ANOVA Statistical Significance**

The F-ratio in the ANOVA table (see below) tests whether the overall multiple regression model is a good fit for the data. The table shows that the independent variables statistically significantly predict the dependent variable, F (2, 117.687), giving Sig. = .0000 (i.e., the multiple regression model suggests a very good fit of the data. The result in ANOVA tables showed approved the hypothesis that states both Learning & Reaction affect Behavior in a multiple regression relationship.

**Table 2:** Anova Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	67.612	2	33.806	117.687	.000 <sup>b</sup>
Residual	87.612	305	.287		
Total	155.225	307			

a. Dependent Variable: X3\_Behaviour

b. Predictors: (Constant), X2\_Learning, X1\_Reaction

**Estimated model coefficients**

The general equation of multiple linear regression equation  $Y=a + \beta_1 X_1 + \beta_2 X_2 + \text{Std. the error}$  is used to predict the dependent variable (Behavior) from the variables (Learning

& Reaction), and after replacing the data from the coefficient table (see below) with each coefficient in the equation, the final equation of multiple regression equation of the model of this study is indicated below:

$$\text{Behavior} = 0.551 + (0.425 * \text{Learning} + (0.364 * \text{Reaction}) + 0.185.$$

Reading the values of standardized coefficient  $\beta$  in the below table for each variable shows a significance level below (0.05) for each  $\beta$ -value (0.000, 0.000) respectively. The Sig. column informs that all coefficients of independent variables are statistically significantly ( $p$ -value < 0.05).

**Table 3:** Coefficients of Multiple Linear Regression

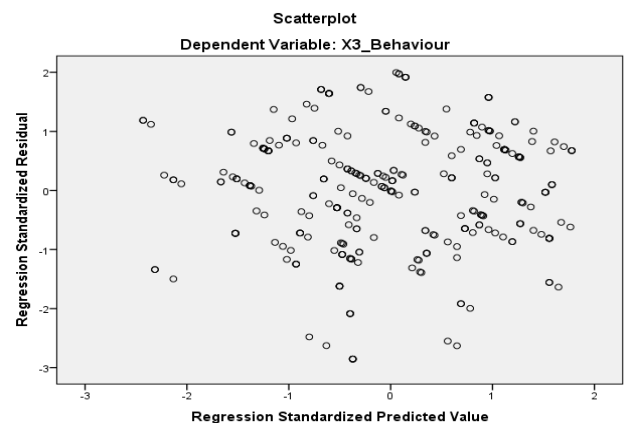
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.511	0.185		2.761	0.006
X1 Reaction	0.364	0.064	0.346	5.699	0
X2_Learning	0.425	0.07	0.369	6.082	0

a. Dependent Variable: X3\_Behaviour

Based on the output from the table of the coefficient of multiple linear regressions, it is found that Learning, Reaction, and Behavior have significant multiple linear correlations, and the association between each independent variable and Behavior are positive. In other words, the theoretical model fits the data very well in.

**Residual Plots for Regression Analysis**

As shown in the chart above, most of the residuals are centered on the axis of zero, and throughout the range of fitted values of residuals, it is found that residual values are not distributed systematically and they are scattered randomly. In other words, the error of prediction is by chance and not due to a systematic effect.



**Figure 2:** The distribution of residuals in the multiple linear regression

**7. Conclusion and Recommendations**

They were a lot of discussion on the importance of training evaluation after the end of training programs. Training evaluation includes a systematic collection of information collected and tested with the trainees in a predetermined plan so that to ensure the result of the training is matching with organization's goals as well as that information and

knowledge transferred to the trainees is appropriate and useful. Kirkpatrick theory is a popular evaluation plan which is considered as the primary training evaluation scheme in profit and non-profit organizations for over thirty years. It is found that most companies practice the reaction evaluation while less percentage practice learning evaluation at the end of the training program. The study suggests that learning activities provided in the training is very important and should be evaluated immediately after the end of training because it perceived activities that motivate trainees to learn new skills and knowledge. The study recommends practicing learning evaluation at the same level as reaction evaluation because both of them take the same importance to the organization and should be examined very well after ending the training program.

- [14] Shelton, S., & Alliger, G. M. 1993. "Who's afraid of level 4 evaluation? A practical approach. *Training and Development Journal*", 47, 43 – 46.
- [15] Steve Dyer. 1994. "Kirkpatrick's Mirror", *Journal of European Industrial Training*, Vol. 18 Iss 5 pp. 31 - 32
- [16] Trevisani, D., 2016, *Communication for Leadership: Coaching Leadership Skills*. Medialab Research, Ferrara.

## References

- [1] Abdel-Wahab, M., Dainty, A.J., Ison, S.G., & Hazlehurst, G. (2008). An exploration of the relationship between training grants and profitability of UK construction companies. *International Journal of Training & Development*, 12(3), 188-205.
- [2] Carla Curado Susana Martins Teixeira. 2014. "Training evaluation levels and ROI: the case of a small logistics company". *European Journal of Training and Development*, Vol. 38 Iss 9 pp. 845 - 870
- [3] Chimote, N. (2010). Training programs: evaluation of trainees' expectations and experience. IUP
- [4] Jacoby, Jeff, 2004. "Making the case for parochial schools". The Boston Globe Publishing
- [5] Kirkpatrick, D. L. (1998). *Evaluating training programs: the four levels*. San Francisco, CA: Barrett-Koehler.
- [6] H.H Kirkpatrick, D.L., & Kirkpatrick, J.D. (2008). *Evaluating Training Programs* (3rd ed.). New Delhi: Tata McGraw-Hill Publishing Company Limited.
- [7] Kordy, Ahmed. 2011. Skills Center for the quality of education and training. <http://kenanaonline.com/users/ahmedkordy/posts/332116>.
- [8] Michael A.Zinovieff with the support of Arie Rotem. 2008. "Review and Analysis of Training Impact Evaluation Methods, and Proposed Measures to Support a United Nations System Fellowships Evaluation Framework". WHO's Department of Human Resources for Health on behalf of the UN Task Force.
- [9] Nickols, F.W. 2005. Why a stakeholder approach to evaluating training, *Advances in Developing Human Resources*, Vol 7, pp 121-134
- [10] Noe, R. 2010. *Employee Training and Development*. 5th ed. McGraw - Hill International Edition, Singapore.
- [11] Phillips, J. and Phillips, P. 2009. "Using ROI to demonstrate performance value in the public sector. *Performance Improvement*, 48(4), 2231.
- [12] Reid Bates. 2004. A critical analysis of evaluation practice: the Kirkpatrick model and the principle of beneficence. Louisiana State University, Baton Rouge, LA, USA. *Evaluation and Program Planning* 27 (2004) 341–347. ELSEVIER Journal
- [13] Shamim Ahammad . 2013. "Importance of Training in Hotel industry -A case study of Hilton Hotel , Cyprus". Södertörn. University. Master's Thesis