

## Chapter #16

### A SUSTAINABLE MODEL TO EVALUATE TRAINING IMPACT IN HEALTHCARE

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#### ABSTRACT

The aim of this chapter is to introduce a sustainable model to evaluate the impact of training in the healthcare sector. Existing approaches in the literature tend to focus on quantitative methods. However, many of these tools and models are often deemed too complex and time-consuming, leading to their underutilization or improper use.

To address these challenges, the TIE-H model (Training Impact Evaluation - Healthcare Model) offers a sustainable approach to evaluate training impact. The model is designed to be implemented within the organizational processes and standard procedures without external consultants.

The model has been developed through a 4-year Action Research intervention in a large Italian healthcare organization. It was tested on over 350 training courses. One key feature of the model is that the process of evaluating training impact begins during the planning phase. This involves classifying each training based on three impact criteria, setting goals, identifying indicators, and determining the evaluation timeline.

The TIE-H model not only provides a new process for evaluating training impact but has also demonstrated effectiveness by aligning the planning phase with the training objectives. This facilitates the identification of training result expectations and serves as a guiding framework for training planning.

*Keywords:* training impact, training evaluation, healthcare organization, action research, organizational psychology.

#### 1. INTRODUCTION

The role of training and personnel development in organizations is widely acknowledged as a strategic pillar (Noe, 2010). Training/learning and development is a fundamental aspect covered in leading Human Resource Management handbooks (e.g.; Armstrong, 2006; Boxall, Purcell, & Wright, 2009). In today's context, training and personnel development hold critical value, especially in the healthcare sector.

Typically, healthcare organizations (such as hospitals and public health structures) bear the responsibility for the continuous education of their staff. Consequently, the department managing training courses need to own the necessary expertise in planning and designing training programs. Previously, the focus was on scheduling all training events in the annual plan, to secure suitable venues, find skilled trainers, and ensure high-quality events (Noe, 2010). However, recent developments, including the rise of e-learning courses, on-the-job training, and the transformative impact of the Covid-19 pandemic, have elevated the strategic importance of the training and development department within organizations. Training is increasingly recognized as a managerial tool that stimulates change and fosters organizational development, extending beyond the traditional role of updating and maintaining professional competence (Reis, Faria, & Serra, 2022).

Furthermore, substantial financial resources are allocated to personnel training, constituting a significant portion of the budget. Therefore, as pointed out by Kennedy, Chyung, Winiecki, and Brinkerhoff (2014), it is crucial to know on which level a training intervention has achieved its objectives. This knowledge can only be gathered through effective training evaluation (Jasson & Govender, 2017). Consequently, effective tools are needed to adequately evaluate the impact of training initiatives. An interesting editorial of *Industrial and Commercial Training* (2004) reports that “*Some 70 per cent of organizations have no formal measurement practices to assess the impact of training employees on the performance of their business*”, and the situation does not seem to have changed much during this past decade (e.g. Bingham, 2022).

## 2. BACKGROUND

The assessment or evaluation of training impact lies in the wider topic of training evaluation and training effectiveness. One of the most cited and criticized model remains the Kirkpatrick model (Kaufman, Keller, & Watkins, 1996) with its theoretical four levels simplified in an implementation of the first two. This model consists in evaluating the training on the basis of reaction, learning, behaviour and results; the author stated they are strictly correlated so that a positive result in the first level brings to a positive result in the second and so on. Although a large number of empirical studies refuted this hypothesis, it happens that for very practical reasons -in saving time and resources- the companies declaring to use this model applying only tools to monitor trainees’ satisfaction and the acquisition of competences at the end of the training. It consists in a coarsely simplification that does not permit to assess the impact of a training (Bates, 2004).

Given the substantial costs typically associated with training programs in organizations, there is a significant demand for solutions that can effectively monitor their effectiveness and added value. While the idea of calculating a Return on Investment (ROI) for training has not been entirely abandoned, and some scholars still propose models to evaluate the monetary costs/benefits of training (e.g., Phillips, 1996; Wang, Dou, & Li, 2002), it is a reality that even when these models are applied, the reported levels of evaluation often focus solely on satisfaction indexes (Spitzer, 2005).

Recently, greater attention has been directed towards Social Return on Investment (SROI). Analyzing the SROI of training enables a more comprehensive consideration of the benefits, taking into account the medium to long-term perspective and incorporating a broader stakeholder approach. This approach identifies opportunities for further improvement. However, SROI remains a quantitative approach, requiring a strong emphasis on financial and economic indicators. Each value needs to be approximated in financial terms. Analyzing the impact of training through SROI places significant focus on the financial aspect. Every training program incurs costs, and organizations allocate substantial resources to training. While the cost may appear to be the easier part of the calculation, determining the financial value of the benefits is a more challenging task (Wood & Leighton, 2010).

When estimating the impact of training on an organization, various types of impact results must be considered. Some results are immediately visible, while others are latent or only become evident in the future. The impact may manifest at the individual or group level, and some training initiatives necessitate organizational changes, while others aim to sustain acquired competencies. It is a delicate matter, and there is a risk that forcing an estimation of financial indices solely to demonstrate the value of training could lead to oversimplification and meaningless conclusions (Griffin, 2012).

In scientific literature, several models for training evaluation have been developed with the contribution of different disciplines: work and organizational psychology, adult learning, management, organizational sociology, docimology, business economics. In one of the most recent and complete review elaborated by Perez-Soltero et. al. (2019), in the 35 models under review, the training evaluation has been considered based on aim (formative, summative), actors (learners/stakeholders), timing (short/long time) and tools (questionnaire/ROI).

A specific area dedicated to training impact appears in most of the models, even named with a different label. For example, output is used in the CIRO model (Warr, Bird, & Rackham, 1970) Context, Input, Reaction, Output and in the IPO Model (Bushnell, 1990) Input, Process, Output. Instead, product or performance are included in the CIPP Evaluation models (Madaus, Stufflebeam, & Scriven 1983) Context, Input, Process and Product; and in the motivational influences training effectiveness (Noe, 1986) that includes trainees' change of behaviour in performance. The impact area is present also in: the three-stage model for assessing and improving training (Attia, Honeycutt Jr., & Leach, 2005) with two levels of impact – individual and collective; the Griffin approach (2012); the eQvet-us training outcome evaluation model (Moldovan, 2016) and, naturally, in all the models aimed at calculating ROI (Phillips, 1996, Wang et al., 2002).

Although there are scholars (e.g.; Alvarez, Salas, & Garofano 2004; Testa & Scaratti, 2018) who underline the difference between training evaluation (micro level) and training effectiveness (organizational level), the most of the training evaluation models considers both the dimensions.

Focusing on the healthcare sector, there are evaluation models dedicated to the pre-service training (university, technical schools), and they are mainly useful for a continuous improvement process and for a competence assessment, having the students as the focus of the evaluation. For example, the Outcome Based Evaluation model (OBE), where the training outcome was defined by Davis et al. (2007) as “a culminating demonstration of learning: it is what the student should be able to do at the end of the course” (p. 717). Nevertheless, this approach is not helpful for analyzing the impact of in-service training. One of the few models tailored for healthcare organizations, considering training impact as part of the evaluation process is the Expero4care model developed by Cervai and Polo (2015): the main feature of the model is the comparison between stakeholders' expectations and perceptions, also in term of expected versus perceived impact.

Although there are dozens of researches reporting case studies on the analysis and measures of the impact of training in healthcare (604 papers in EBSCO database, containing the words training and impact in the title, healthcare in the abstract, in September 2023), however none of them - at author's best knowledge – present a theoretical model to guide a healthcare organization in the evaluation of the impact of training, that is the rationale of the present chapter.

### **3. OBJECTIVES**

Acknowledging the necessity for healthcare organizations to incorporate training impact monitoring into their standard evaluation processes and the need for scientific literature to elaborate a general model adaptable to different organizations, a four-year Action Research (AR) project was conducted with an Italian healthcare organization. The main objective was to develop and test a new model to evaluate training impact with the intention of making it applicable, sustainable, and robust for the specific organization (Griffin, 2012), while also ensuring its exportability to other healthcare organizations.

## 4. RESEARCH DESIGN

In the following part, we describe the AR process, starting from a description of the context, the rationale for the choice of this approach, the description of the process, the results.

### 4.1. Context

A local health district in North-Eastern Italy approached the academic unit requesting support in the evaluation of the impact of training provided to the employees. The intervention has been required as a consultancy in organizational psychology to improve the training and development process of the healthcare organization.

The public healthcare organization consists of 2 hospitals, 11 territorial departments 4,128 employees in healthcare professions and around 1000 belonging to administrative staff. In 2019, the budget for training courses amounted to 500Keuro, with 7,420 hrs of training provided.

At the training center there are 10 employees (1 manager, 6 training designers, 3 administrative staff), moreover a wide network of referents, almost one in each department/service, act as the operational arm of the training center in most peripheral services. This network includes physicians, nurses and technical health professionals – around 40 people with a formal role of training referent. They focus on analysing training needs and providing the training center with the features of the training course requested by the facility itself in order to build the yearly training plan (decided upon by the general management and approved at a regional level). Training referents support the training center in tailoring a training course once it has been approved. In short, they link the central administration with each branch, service and department in hospitals and health services.

After a first round of negotiation involving academic researchers and representatives of the training center, it becomes evident that it was crucial to involve the training referents in the process of training impact evaluation. Academic researchers proposed an AR model aimed at generating a sense-making process in building a model to evaluate the impact of trainings in the organization.

### 4.2. Sample

The project team consisted of three academics, the chief manager of the training center and 32 training referents employed in different services/departments of the healthcare organization (81.25% female; all graduates: 62.5% in nursing, 31.25% in technical and healthcare professions, 6.25% in medicine).

In the 4- year project, hundreds of trainings have been considered for a preliminary classification and a successive validation of the Training Impact Evaluation for Healthcare (TIE-H) model. This preliminary work was necessary to develop and test the model in a sensemaking process where training referents were progressively involved in testing and improving the process. Finally in 2022, on the basis of managerial decision about sustainability and strategical value of the model, a selection of 36 training courses was chosen to monitor the impact, 18 completed the whole cycle during 2022 (from the planning to the evaluation) the remaining in 2023, reaching a great success for the organization.

### **4.3. The Action Research Method**

Among the various approaches on AR deriving from Lewin theory, the authors anchor to the Action Science approach (Argyris & Schön, 1992) with the aim of creating common meanings and in order to generate learning processes in developing a shared model for training impact evaluation. The process is based on reflexivity where participants are asked to describe their past experiences concerning the training impact evaluation, ponder possible added values to be gained from a common model, and the related benefits for both the organization and the participants. Researchers are seen as experts who devote their competences to find a common model that covers both the needs of training referents (simplification of processes, common classification/meanings, etc.) and the requirements of the Organization (to evaluate the training impact). The researchers also considered the Reason and Bradbury's approach (2008) in order to underline the importance of developing knowledge through participation, and to develop awareness of the training impact evaluation. The researchers mainly acted as enablers, supporting contributions from training referents, facilitating the mutual ex-change of experiences of previous attempts to evaluate impact, reporting and summarizing different options and, finally, proposing a common model to be implemented. Indeed, the aim was not only to create a model, but to propose a new process that the healthcare organization could implement (Koch & Kralik, 2006). Given that the involvement of the training referents was crucial for the enactment of the model, the AR approach (Johnson, 2008) has been seen as the appropriate choice to strengthen the meaningfulness of this tool, without burdening the process.

### **4.4. The Action Research Process**

The project lasted 4 years (September 2018 – December 2022) and alternated workgroup (with project team and training referents) and individual activities (carried out by the researchers and by the referents). The step-by-step process is described in Figure 1.

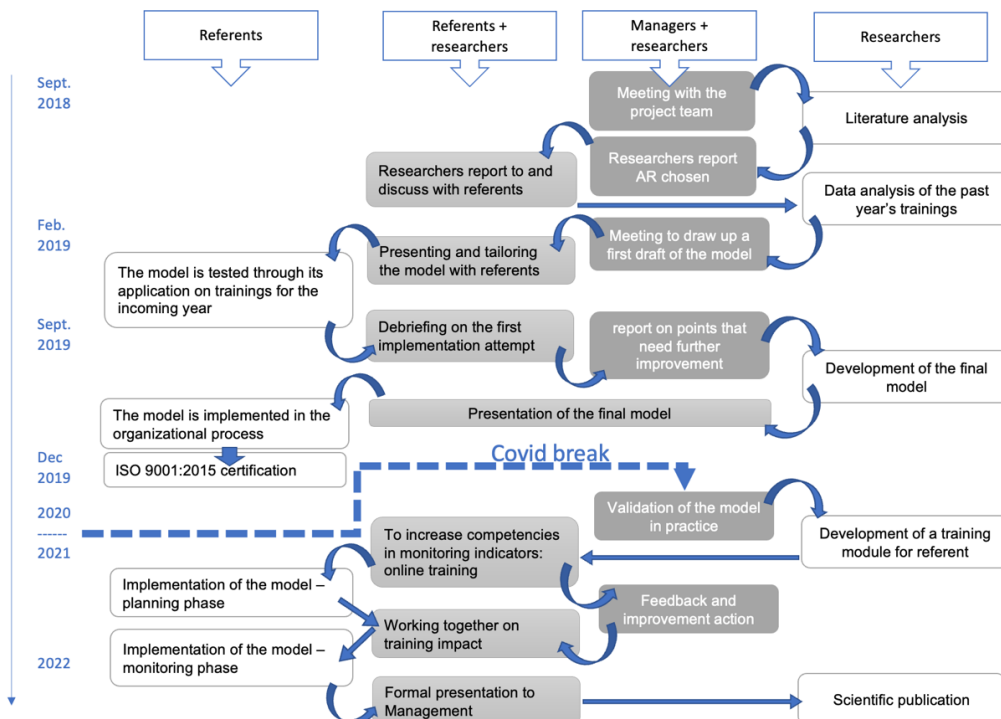
During the first year the whole team agreed to begin from the state of the art, both exploring scientific literature and analysing the large database of training courses provided by the training center of the healthcare organization over the past years. Academic researchers reviewed literature and presented results to organizational team, in order to find the features of a model that can fit the organizational needs. A first theoretical draft of the model was presented at the end of the first year, proposing a classification of different areas and criteria to monitor training impact. Training referents were requested to test the model in the second year to understand its feasibility and to individuate strengths and weakness points.

During the second year, academic researchers analyzed how the training referents applied the model, finding gaps and critical points; this helped to elaborate a new tailored version of the model and to propose a training course to support the referents in individuating indicators to monitor the training impact.

During the third year – because of the Covid-19 – the whole process slowed down, working only with remote meetings: a case study was proposed through an online training to the team of training referents. This case study refers to an innovative training course developed to prepare healthcare employees to work in Covid-19 sectors. The whole group of training referents shared ideas and developed a common method to monitor the training impact of this specific course. The experience was important to define a common method and to exercise on defining indicators and tools to monitor the impact. Whereupon each referent implemented the model on two single trainings and the researchers analyzed the results.

During the fourth and final year of the project, the model in its definitive version was included as standard in the organizational process of the training center. A selection of the monitored training courses was presented to the head managers of the organization during a formal meeting. Academic researchers introduced the model to the Regional Government that is intentioned to adopt it a regional level in the next years.

Figure 1.  
The Action Research Project: step and actors involved.



## 5. THE TRAINING IMPACT EVALUATION FOR HEALTHCARE MODEL (TIE-H) MODEL

The main result of the project consists in the elaboration of a new model to evaluate the impact of a single training. The model, hereby called TIE-H (Training Impact Evaluation for Healthcare), consists of two steps. The first one acts in the planning phase of the training and the second one after a defined period from the end of the training.

### 5.1. First Phase – Planning

It consists in a reflection about the kind of impact expected from the training course, following the framework presented in Figure 2, which comprises three criteria, each encompassing three or four categories. Recognizing that a training program can have an impact on multiple categories simultaneously, the selection within each criterion should consider the category in which the impact is most prevalent.

Upon pondering on the type of training impact expected, the training referents outline the expected results, specifying the timeframe for monitoring them (referred to as T1), along with the indicators and the assessment tools. Subsequently, it is essential to define the expected results in terms of expected value of the indicators in T1 and, whenever feasible the initial value (referred to as T0).

*Figure 2.*  
*TIE-H Model – Criteria to define the training impact.*

Area	Value	Innovation
<input type="checkbox"/> Individual	<input type="checkbox"/> Effectiveness	<input type="checkbox"/> Normative
<input type="checkbox"/> Team	<input type="checkbox"/> Service Quality	<input type="checkbox"/> Improvement
<input type="checkbox"/> Organization	<input type="checkbox"/> Engagement	<input type="checkbox"/> Strategic
	<input type="checkbox"/> Organizational culture	<input type="checkbox"/> Disruptive
Expected results <i>(describe using indicators, tools and expected value)</i>		
Training impact will be monitored on <i>(insert date)</i>		

The rationale behind the three criteria is to serve as a compass in defining the impact of training. In the context of healthcare training, there is often a lack of familiarity regarding the meaning of training impact. To facilitate this process of sensemaking, reflecting on each criterion allows for a more precise awareness of the training impact within the specific training context.

In the first criterion, a decision must be made regarding the focus of impact: whether it is on the individual, the team they belong to, or the broader organizational perspective. This classification is already present in literature about adult learning (e.g.; Marsick, 2009). It is important to note that while the individual attends the training and acquires new knowledge and competencies at the individual level, the impact is not limited to the individual alone. When the expected change is at the team level, it implies that the entire team's processes will be influenced by the training (e.g., team building). Similarly, when a training aims to improve a new process, it has an impact on the entire organization (e.g., implementing new norms on data privacy in the internal communication process).

In the second criterion, the reflection is on different types of impact: effectiveness, service quality, stakeholder engagement, and organizational culture. The training may aim to enhance the effectiveness of a specific process (e.g., reducing the duration of a medical treatment by training more physicians to use a specialized medical equipment) or improve the quality of services (e.g., reducing waiting lists). Additionally, there are trainings designed to engage patients or caregivers in the care process, resulting in observed impact in terms of "patient engagement" (e.g.; Graffigna & Barelo, 2018). Finally, there are trainings dedicated to share new values within the organization.

In the third criterion, the training referent has to indicate the level of change expected through the training. It is important to recognize that not all training courses are intended to bring about radical innovation. In the healthcare sector, there is a long tradition on updating knowledge in line with new discoveries in scientific literature. However, there are cases where the expected impact can be more or less challenging.

Considering that a significant portion of trainings is planned to meet regulatory requirements (such as safety training), three additional levels have been identified: improvement, strategic and disruptive. When a training is mandatory due to legal or

regulatory obligations, it falls under the normative category. However, in other cases, the three levels can be selected based on the expected level of innovation: high (disruptive), moderate (strategic), or low (improvement).

## **5.2. Second Phase – Monitoring**

The timing for conducting the impact evaluation is established during the first phase, typically 3 to 9 months after the conclusion of the training. The rationale in the choice is to have enough time to see the change in facts; it depends on different factors that each training referent can evaluate to fix the period. The training referent monitors the indicators using the predetermined tools and reports on the findings. The evaluation may reveal one of three scenarios.

In the first scenario (scenario #1), the monitored indicators demonstrate that the expected results have been achieved. This indicates that the training has successfully accomplished its intended impact, allowing for the reporting of results in terms of accountability.

In the second and third scenarios, the expected results have not been attained, as indicated by the indicators deviating from what expected. Consequently, the training referent must examine deeper into the analysis, often adopting qualitative methods, to uncover the underlying causes.

The model proposes two potential scenarios: scenario #2 suggests that the staff requires additional or different training, while scenario #3 suggests that obstacles within the organizational processes hinder the application of acquired competencies.

In scenario #2, a new training process should be planned, taking into account the impact evaluation of the previous training as a needs analysis for the subsequent training event. It may be necessary to address insufficient levels of competencies gained in the first training, train additional stakeholders, or design a different training program to align with organizational needs.

In scenario #3, even though the competencies appear to have been acquired, difficulties arise in their practical application, resulting in the expected results not being observed. This could indicate the need for protocol changes, organizational restructuring, or additional time to evidence the expected changes.

## **6. LIMIT AND CONCLUSION**

By implementing the TIE-H model, the organization is equipped to evaluate the impact of specific trainings; it does not aim to evaluate the whole training process. It does not provide as output a quantitative indicator about how effective the process is. Indeed, it cannot be considered as an alternative of ROI or SROI indicators.

TIE-H model is a tool useful in the improvement process of the training. Indeed, it considers the impact as feedback to analyse if there is a need to acquire more competencies, if there are organizational processes to improve or any different aspects to be redefined in future edition of the training.

The specific trainings chosen for monitoring the impact are those deemed strategic for the organization, taking into account the capacity and resources of the training center. In this regard, the model provides ample flexibility for the management to determine which trainings deserve to be evaluated allocating adequate resources. It is important to underline that the process of evaluation requires specific competences and resources. No algorithm can automatically generate a relevant and meaningful assessment of training impact.



One strength of the model is that it starts from the planning phase: a crucial step that allows the training referent to clearly define the expected results and reflect on the expected changes that the training will bring. This process not only aids in the design of the training itself but also establishes the parameters for post-training monitoring.

A valuable lesson learned from this project is the importance of avoiding a judgmental perspective, which can be inadvertently conveyed through terms such as "evaluation" or "measure." Instead, we opted to use terms such as "monitor" and "assessment" to emphasize capturing changes without passing value judgments. Furthermore, we recognize the challenge in finding suitable measures to assess these changes, and therefore, we introduce the flexibility to utilize both qualitative and quantitative tools for monitoring the impact. It has to be recognized that the choice of good indicators can be considered as the main limit in the evaluation of training impact through TIE-H model. Another difficulty lies in the categorization of the training courses, where the training referents need to be trained and assisted, at least in the beginning.

This AR project has provided high value inside one organization and it indeed represents a limit of this study because it is not possible to sustain that TIE-H model will be suitable and beneficial to other healthcare organizations. Only testing the model in other healthcare organizations could confirm its broad applicability and contribute to further enhancements. And it is necessary that this testing into new organizations requires the involvement of the training referents through a participative approach. We are aware that the AR process has facilitated the acceptance of the new process, and may also constitute a critical factor for further application.

The model has been thought for healthcare sector the choice of indicators, areas and the whole process has been elaborated for this particular sector. and it can contribute to the scientific literature in this field where few other attempts are present. It is evident that foster studies are necessary to validate the model's effectiveness, particularly in diverse healthcare settings and different countries.

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