

## Chapter 2.17

# A Cross–Cultural Framework for Evaluation

**Pekka Turunen**  
*Shiftec, Finland*

### ABSTRACT

The evaluation of information systems (ISs), especially in the healthcare field, is a complex task. Evidently, there is a need for better understanding of the different aspects evaluation. While in the general IS science field there have been several attempts to build frameworks and models to better understand the evaluation of ISs, in healthcare similar frameworks have been almost nonexistent. Unfortunately, general frameworks cannot be exactly applied for the cross-cultural evaluation of healthcare ISs, because they do not recognise the specific nature of the medicine. Based on works in different areas, this chapter represents an attempt at to combine them to conceptual frameworks for the evaluation of healthcare ISs.

### INTRODUCTION

The evaluation of health information systems (ISs) has proved to be an especially difficult task. Evaluation projects are often interdisciplinary by nature and designed by both information technol-

ogy people and medical professionals (Heathfield, Pitty, & Hanka, 1998; Turunen & Talmon, 2000). Different parties have difficulties in understanding each other because, for example, a lack of common tools (Nykänen, 2000).

Among others, one problem is the lack of framework for conceptual understanding of IS impacts and their evaluation. Frameworks and models, used for that purpose, are mainly drawn from different research areas and, unfortunately, are inadequate for this specific field. The frameworks for the evaluation of information systems are not able to describe the specific nature of the area (e.g., golden standards). At the same time, the frameworks for evaluation in the healthcare field do not usually recognise the difficulties of measuring impacts of ISs, the need for external validity or they are too general for the evaluation of ISs. Yet, it has been suggested that a new evaluation paradigm is needed (Shaw, 2002).

This chapter presents well-known models from those different areas and combines them into an appropriate framework for the evaluation of health ISs. The framework is based directly on the previous works and is a logical extension of

the historical development of such models and frameworks.

The purpose of the frameworks is to formulate a conceptual guide of evaluation and emphasise the connection (noncausal by nature) between the different impacts of healthcare ISs. Thus, the framework may be useful in identifying relationships among the success variables of ISs. It assists in taxonomising existing evaluation results of ISs and, therefore, in comparing different evaluations. Equally, the framework should aid in making an overall judgment based on different evaluation methods and results of the healthcare IS. Furthermore, the frameworks may give some hints for the measurement of different impacts.

The article presents frameworks at two levels. A general framework describes healthcare IS evaluation at a general level. In addition, a specific framework has been developed for diagnostic ISs. A procedure to minimise evaluation is also presented.

## **FRAMEWORKS FOR THE EVALUATION OF INFORMATION SYSTEMS**

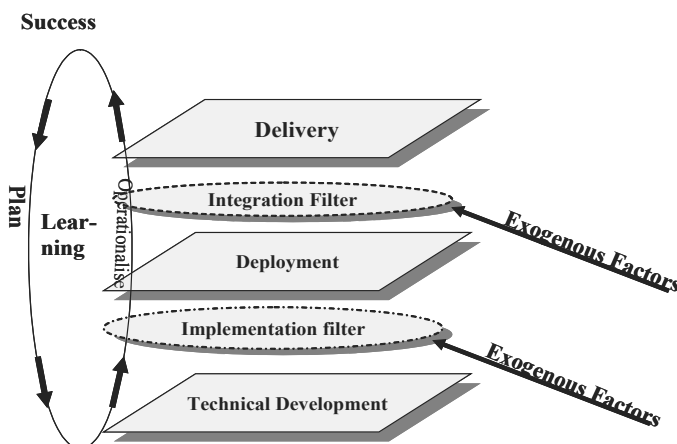
The best known and most widely used framework for the evaluation of ISs is probably DeLone and

McLean's (1992) IS success model (Iivari & Ervasti, 1994; Jurison 1996). This model has brought about a good amount of fair and unfair criticism and, therefore, has encouraged further development in the area (Ballantine et al., 1996; Bonner, 1995; Grover, Jeong, & Segars, 1996; Kangas & Manwani, 1998; Manwani & Kangas, 1998; Pitt, & Watson, 1994; Seddon, 1997; Seddon, Staples, Patnayakuni, & Bowtell, 1998). One of the most important further developments is the 3-D model of IS's success (Balantine et al., 1996).

The 3-D model has been divided into three main elements: a) development, b) deployment, and c) delivery (see Figure 1). The development element includes such things as technology, system type, quality of data, IS-professional skills, and so forth. The second element contains variables such as user satisfaction, task impact, personal impact, and so on (e.g., alignment of individual business objectives, resources, and use of the output are included in the delivery element). In addition to these three elements researchers also refer to a *fourth element* of political, social, and economic impacts. The meaning of these aspects will be increased while implementing wide Internet-based ISs. However, private-sector focus of evaluation is still often at the organisational level.

Filters among elements try to illustrate that an impact at one level does not automatically cause

*Figure 1. The simplified version of 3-D model for information systems success. (Source: Balantine et al, 1996)*



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