Institutional Dimensions of Information Systems Evaluation[1]

Vassilis Serafeimidis
Atos KPMG Consulting, UK

INTRODUCTION

Information systems (IS) evaluation is a complex organizational and social decision making process. IS evaluation has attracted a lot of interest from the academic community and practitioners during the last few decades. This interest in some way has been generated by the tremendous increase of IT investments and the fact that IT/IS have become an organizational "necessity" in order to, for example, support routine data processing operations, initiatives for competitive advantage, and business transformation exercises.

IS evaluation is highly subjective and context dependent, as well as covering a wide area of situations and activities. A number of good definitions are listed next:

"Evaluation is a series of activities incorporating understanding, measurement, and assessment. It is either a conscious or tacit process which aims to establish the value of or the contribution made by a particular situation. It can also relate to the determination of the worth of an object." (Remenyi & Sherwood-Smith, 1997, p. 46).

"IS evaluation is a process for searching and for making explicit, quantitatively or qualitatively, all the impacts of an IT project and the programme and strategy of which it is a part." (Farbey, Land & Targett, 1999, p. 190)

BACKGROUND

Information Systems Evaluation – The "journey"

In the 1980s organizations started to realize that successful IT outcomes do not occur by default; they are highly uncertain and in order to achieve organizational success, IS have to be managed effectively and be considered broadly within their context. The difficulties in identifying and measuring potential benefits and costs, deriving from current organizational practices, forced many organizations to establish management control mechanisms. Among these mechanisms are the thorough "appraisal" of potential IT investments and the "evaluation" of their expected deliverables.

Evaluation happens in many ways (e.g., formally, informally), uses diverse criteria (e.g., financial, technical, social), follows rigorous methodologies or "gut feelings," and often becomes a political instrument that influences the balance of organizational power and stimulates organizational changes.

The role that evaluation plays as an organizational process varies. It is strongly related to other management and decision making processes. The management expectation from IS evaluation is about establishing by quantitative and/or qualitative means the worth of IT to the organization (Farbey et al., 1993) and IT's contribution to the organizational growth (Bakos & Kemerer, 1992; Hitt & Brynjolfsson, 1996). This can be achieved by effective IS evaluation which ranks alternatives (Clemons, 1991) and forms a central part of a complex and incremental planning, decision-making and control (diagnosis) process (Hawgood & Land, 1988). Evaluation is then a crucial feedback function (Baker, 1995), which helps the organization learn (Walsham, 1993) and thereby reduces the uncertainty of decisions. This feedback helps trace and understand the underlying factors leading to the success or otherwise of an IT investment. In many cases (Farbey et al., 1995) evaluation is a mechanism for gaining commitment and, in highly politically influenced environments, for legitimization, and in some other occasions is a mechanism for exploration and discovery.

In order to understand IS evaluation we have to focus on the why, what, which aspects, when, who and how dimensions. Three different streams of IS evaluation theoretical and practical developments have been dominating this research field: the technical/functional; the economic/financial; and the "interpretive".

The traditional (formal-rational or functionalist) conception sees evaluation as an external judgement of an information system that is treated as if it existed in isolation from its human and organizational components and effects. It also places excessive emphasis on the technological and accounting aspects at the expense of the organizational and social aspects. Therefore, it neglects the organizational context and process of IS development and its content, elements that are critical to the successful application of IT in support of the business. In general, more attention has been focused over the years on pre-

scribing how to carry out evaluations (with technically-driven and cost-focused frameworks) rather than analyzing and understanding their role, interactions, effects and organizational impacts (Smithson & Hirschheim, 1998).

Both the *functional and economic* streams promote a logical rationalistic philosophy that searches for the efficiency and effectiveness of an information system in technical and business terms. Developments under these areas have attracted attention for a long period of time as they have addressed necessary questions regarding the performance and the financial aspects of the technical components and their investment returns. These two modes, although necessary and complementary, suffer a number of deficiencies. Their limitations include the:

- limited consideration of the organizational context,
- narrow purposes deriving from the formal/rational paradigm,
- lack of consideration of the new content elements and relevant measures,
- confined and fragmented time horizon,
- neglect of human aspects of evaluation, and
- narrow methodological focus.

Table 1. Summary of the characteristics of the IS evaluation modes (based on Serafeimidis, 2001)

	Technical stream	**Economic stream**	**Interpretive alternatives**
Why - Purpose/ Reasons	· Technical performance (e.g., quality) · Control of resources (e.g., costs)	· Quality and utilization of IS outputs (e.g., accuracy of information)	· Context-sensitive (i.e., contingent, emergent) · Understanding of social actions · Organizational learning
What - The subject of evaluation **Criteria and measurement**	· IT system · Automate - Cost reduction	· IS outputs · Informate - Productivity - Business value - User satisfaction · Uncertainty/Risks	· Broad portfolios of processes and systems · Intermediate relevant measures (e.g., more reliable systems)
When - Time frame	· *Ex ante* and *ex post* in relation to the systems development life cycle	· *Ex ante* and *ex post* in relation to the systems development life cycle	· Continuous benefits management
Who - People	· IT experts	· IT experts · Finance experts · Business managers	· "Evaluation party" including internal and external stakeholders
How – Methodologies /Tools	· Quality-related (e.g., TQM, software metrics) · Cost-related (e.g., COCOMO, function point analysis)	· Economic oriented (e.g., agency theory) · Finance oriented (e.g., CBA, SESAME, DCF, IRR) · Behavioral science driven (e.g., ROM, value analysis)	· Meta-methodologies · Contemporary methods (experimental and exploratory)
Strengths	· Addresses the technical system performance · Assesses the efficiency of IT/IS	· Focuses on financial and economic impact of the investment · Assesses the effectiveness of IT/IS	· Increases the understanding of the role and impact of the investment · Assesses the fit and the contributions of IS/IT within its organizational context
Weaknesses	· Does not address uncertainty of business requirements and the organizational fit of IT · Prescriptive	· Approaches require specialist expertise · Dominated by economic results	· Applicability and use are challenging