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# Chapter LXIV

## IT Evaluation Issues in Australian Public–Sector Organizations

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### INTRODUCTION

Public-sector organizations are one of the top spenders in information technology (IBM, 2006). According to an IDC report, global public-sector IT spending will exceed \$138 billion in 2006, representing 12.2% of overall IT spending (IBM). In the United States, public-sector IT spending is likely to grow to \$92 billion in 2010 from \$71 billion in 2005 (Pulliam, 2005). Despite the huge and growing IT spending by public-sector organizations, the resulting benefits from these IT spending are still not clearly understood (Gunasekaran, 2005). This is often due to the poor IT investment evaluation process implemented by these public-sector organizations (Hall, 1998). In other words, there is a lack of understanding of the impact of the proper IT investment evaluation processes of IT projects in the public-sector organizations. The IT investment evaluation is an

ongoing process that seeks to identify best practice and use it as a basis for evaluating public-sector IT project performance in order to set up clear goals and identify areas for improvement (Gunasekaran, 2005). For example, without undertaking proper IT investment evaluation processes, organizations are at the risk of failing to establish clear IT project goals and design. Therefore, research in the public-sector organizations is becoming critical, especially in how these organizations evaluate their IT projects and ensure that benefits expected from these projects are eventually delivered.

The main objective of this chapter is to identify evaluation issues that are critical in the implementation of IT projects by public-sector organizations. A key contribution of the chapter is to identify and examine evaluation issues and other key factors faced by public-sector organizations undertaking IT projects. The key issues presented are of interest to senior public-sector

executives concerned with making decisions about IT investments and realizing IT benefits.

## **BACKGROUND**

### **IT Investment Evaluation**

While organizations continue to invest heavily in IT, research studies and practitioner surveys report contradictory findings on the effect of the expenditures on organizational productivity (Osei-Bryson & Ko, 2004; Thatcher & Pingry, 2004). Therefore, it is not difficult to see that the measurement of the business value of IT investment has been the subject of considerable debate by many academics and practitioners (Sugumaran & Arogyaswamy, 2004). Although some IT productivity studies have produced inconclusive and negative results, and the interpretation of the results may have depended on many factors (e.g., Zhu, 2004), many research studies have indicated that IT spending is directly related to organizational performance (e.g., Hu & Quan, 2005).

In addition, the complex role and scope of IT investment decision-making processes are often the major constraints and difficulties in IT investment evaluation and benefits realization processes (Lin, Lin, Huang, & Kuo, 2006; Sugumaran & Arogyaswamy, 2004; Tsao, Lin, & Lin, 2004). Many private-sector IT projects fail to deliver what is expected of them because most organizations focus on implementing the technology rather than the adoption of the tools necessary to help to track and measure the IT projects (Hillam & Edwards, 2001). For example, a study by Sohal and Ng (1998) has found that in large Australian organizations, the potential of IT has not been utilized to meet the competitive challenges due to inadequate and inappropriate evaluation of the proposed IT projects. Moreover, they have reported that 59% of the responding organizations did not determine whether expected benefits were being realized.

There have also been a lot of reports on public-sector IT project failures. One of the major reasons for IT project failure is that most organizations fail to properly monitor and evaluate IT projects (Ballantine & Stray, 1998; Domberger, Fernandez, & Fiebig, 2000; Perrin & Pervan, 2004). It should be understood that IT investment evaluation in the public sector is highly complex, due in part to legal requirements that govern organizational processes (Khalfan, 2003), but also because it is a very politically sensitive process with many stakeholders holding very different and often conflicting perspectives (Allen, Kern, & Mattison, 2002; Heeks, 1999). While IT investment evaluation processes in the private sector is generally seen as something normal, there are special characteristics of the public sector that makes it inappropriate or extremely difficult (Bannister, 2001; Kouzmin, Loffler, Klages, & Korac-Kakabadse, 1999). Sullivan and Ngwenyama (2005) have found that some public-sector guidelines do not effectively address IT investment performance monitoring and evaluation. According to Jones and Hughes (2001), IT investment evaluation techniques are not widely used in public-sector organizations. However, according to Forrester Research, only 55% of public-sector organizations have intended to increase their efforts in evaluating their IT investments (IBM, 2006). Hence, the inability of many organizations to measure and apply IT both inter- and intra-organizationally is resulting in missed opportunities and a lack of business value (van Grembergen & van Bruggen, 1998).

### **IT Benefits Realization**

While IT investment evaluation processes are important, they are insufficient in terms of ensuring that the benefits identified and expected by organizations are eventually realized and delivered (Lin, Pervan, & McDermid, 2005). The essence of benefits realization is to organize and manage so that the potential benefits arising from the use of IT can actually be realized (Ward, Taylor, & Bond, 1996).

Seddon, Graeser, and Willcocks (2002) have indicated that the identification and measurement of benefits is the most difficult issue in evaluating IT. According to Ward et al. (1996), very few organizations have a benefits realization approach. Much attention is paid to ways of justifying investments, with little effort being expended to ensuring that the benefits expected are realized (Ballantine & Stray, 1998). For example, a survey by Forrester Research indicated that only 51% of public-sector organizations had considered making some serious efforts in realizing the expected benefits of their IT investments (IBM, 2006). As the result, there is a massive imbalance between IT investment and benefits derived from that investment (Love, Irani, Standing, Lin, & Burn, 2005).

While the search for benefit identification can contribute to the success of an IT investment, organizations have often found it difficult to evaluate them and as a result tend to use notional arbitrary values for assessing benefits (Lin & Pervan, 2003; Standing & Lin, 2007). The use of a formal benefits realization methodology (e.g., Cranfield Process Model of Benefits Management; Ward et al., 1996) is important in assisting organizations to ensure that their expected benefits are delivered (Changchit, Joshi, & Lederer, 1998; Lin et al., 2005).

## **RESEARCH METHODOLOGY AND FINDINGS**

### **Research Objectives and Methodology**

Before the case study was conducted, a pilot survey was carried out to first obtain an overview of current Australian service industry practices and norms in managing IT benefits and evaluation. Questionnaires were sent to IT managers in Australian public-sector organizations. The pilot survey results show some similarity to much of

the non-Australian studies (e.g., Ward et al., 1996; Willcocks & Lester, 1997). In summary, a variety of informal IT investment evaluation methodologies were used and most users were not involved in IT investment evaluation and implementation. Respondents had different reasons and success measurements or benchmarks for IT investments. Moreover, while about two thirds of the survey respondents indicated that they had ever used an evaluation methodology, only about one third had ever utilized a benefits realization methodology to ensure their expectations were realized eventually. While the survey was useful in obtaining an overview of the IS and IT evaluation practices of the large public-sector organizations, case studies were needed to investigate detailed issues such as the use of the IT investment evaluation and benefits realization methodologies and their effects on IT project implementation.

An in-depth case study was conducted on two public-sector organizations in Australia. The case-study method was chosen because it enables the researcher to examine the context of the evaluation processes and better understand the responses given in the interviews through observation (Silverman, 2001). The first organization (Case A) had more than 10 major IT projects running concurrently and many of them were contracted out to external IT vendors. On the other hand, the second organization (Case B) had only three major IT projects and only one was contracted out. Case A had adopted an informal IT investment evaluation methodology but without any IT benefits realization methodology. Case B also used an informal IT investment evaluation methodology but with a formal IT benefits realization methodology. In total, 20 key participants (CEOs [chief executive officers], CIOs [chief information officers], IT managers, and project managers) were interviewed, including some from their major external IT contractors. The interviews focused on both organizations' major IT projects, the IT investment evaluation methodology deployed, and benefits realization process used. All interviews

were taped and the transcripts were sent to the interviewees for validation. Other data collected included some of the actual contract documents, planning documents, and some minutes of relevant meetings. More than 200 pages of transcripts were analyzed. Qualitative content analysis was used to analyze the data from the case studies. The analysis of the case-study results was conducted in a cyclical manner and the results were checked by other experts in the field.

### **Case-Study Findings**

A number of issues emerged from the analysis of the text data, and some of the key issues surrounding the use of evaluation methodologies are presented below in some detail.

#### **Lack of Use of Formal IT Investment Evaluation Methodology**

Most of the case-study participants claimed that a methodology or process was in place for investment evaluation. However, closer examination of the participants' responses reveals that there was a lack of formal IT investment evaluation methodology or process used.

Most of the participants from the case-study organizations claimed formal IT investment evaluation methodologies or processes were used for evaluating the IT projects. However, closer examination of the participants' responses and project documents revealed otherwise. Documents such as service-level agreements (SLAs), monthly reports, standard contract management, and public-sector guidelines provided by organizations were stated by most participants as the IT investment evaluation methodology or process used for evaluating IT projects. Most of these measurements were related to the contract conditions specified in the SLAs within each project and no formal IT investment evaluation methodology, process, or technique (e.g., information economics) was mentioned. In reality, only informal IT investment evaluation processes (e.g.,

cost-benefit analysis) were used. However, several participants mistakenly thought project control and evaluation mechanisms specified within the SLAs constituted their IT investment evaluation methodology or technique. Furthermore, this may be also due to the fact that both case-study organizations were unable to introduce a formal IT investment evaluation methodology because they were required to follow the public-sector IT project contract guidelines.

#### **Conflict between Motivations and Success Criteria for IT Projects**

There appeared to be a conflict between both organizations' motivations for investing in IT projects and the criteria for determining the success of these projects. Access to the required technical expertise was cited by most participants as one of the motivations for investing in these projects. Therefore, one can expect that getting the required expertise and cost saving should be mentioned by at least half of the participants as their criteria for determining the success of these IT projects. However, this was not the case. None of the participants mentioned getting the required technical expertise as one of the criteria for determining the success of the IT projects. Cost saving was not explicitly mentioned by any participant.

It seemed that the participants had different expectations regarding the IT projects. Alternatively, the participants may have felt that the IT projects had already brought in the required technical expertise and, therefore, should not be used as one of the criteria for determining the success of the projects.

#### **Lack of User Involvement in IT Project Implementation and Evaluation**

User involvement has a positive influence on the successful outcome of system implementation. This implies that getting users involved in the

project implementation and evaluation processes may improve their attitudes toward the system, and enhance the importance and relevance users perceive about the system. However, none of the participants was involved with any of the original IT project justification and negotiation processes. It appeared that the IT project justification process was handled by other units within both organizations.

There appeared to be an “organizational memory gap” where units within both organizations possessed knowledge of different sorts (i.e., investment evaluation and benefits realization) of the entire IT system’s development cycle. However, the knowledge did not seem to be shared by all units because different units participated in different stages of the IT project development cycle. It is arguable that both organizations’ project implementation and evaluation processes would be even more successful if the participants were involved in the original IT project justification and negotiation processes as well as the benefits realization process.

### **General Lack of Commitment by Contractors**

There was a general lack of commitment by external IT project vendors. Most external vendors’ criterion for determining the success of the external contracts seemed to be maximization of profit and revenue. The contractors’ lack of commitment can also be demonstrated by the fact that they either did not know (or care?) why the organizations selected external IT vendors. This was despite the fact that all of the external contracts were in partnership type of arrangements.

This result appears to confirm the studies conducted by several researchers, which indicate that not only are many organizations from the private or public sector skeptical about partner-

ships (Hancox & Hackney, 2000), but also the partnership type of contract is not the most successful because the profit motive is not shared (Lacity & Willcocks, 1998).

### **FUTURE TRENDS**

IT evaluation must be considered as a continuous activity as the IT itself evolves and adapts over time. More successful organizations in the future are likely to be the ones that persistently evaluate their new IT initiatives in order to gain the expected benefits. These include the use of formal IT investment evaluation and benefits realization methodologies and the formulation of effective strategies to assess their IT initiatives from the technical, social, and economic perspectives. These organizations will invest only in those IT projects that are likely to deliver productivity gains.

### **DISCUSSIONS**

As mentioned earlier, the effective deployment of appropriate IT investment evaluation and benefits realization methodologies are critical to the successful outcomes for IT projects. The results from this study indicate that most organizations have suffered from poor IT investment evaluation practices. A number of issues have emerged from the data and some key issues have been presented in this chapter. These include the lack of use of formal IT project evaluation processes, conflicting motivations and different perceptions of success of the IT projects by stakeholders, lack of user involvement in IT project evaluation, and general lack of commitment by external IT vendors.

## **FUTURE RESEARCH DIRECTIONS**

According to Carr (2003), IT has become a commodity because it has become widespread, as has happened to other innovations such as engines and telephones. IT has become the infrastructural technology and, therefore, is often subject to overinvestment and causes economic troubles such as the “Internet Bubble” (Carr). Carr’s views on IT are not shared by many IT practitioners and academics who argue that IT still has a lot to offer in the future and can deliver competitive advantages to organizations (Evans, 2003). More recent evidence suggests that many organizations simply got carried away with IS and IT and spent money unwisely in the late 1990s. According to a study by the McKinsey Global Institute, more successful organizations analyzed their economics carefully and spent on only those IS and IT applications that would deliver productivity gains, sequencing their investments carefully through a disciplined approach with innovative management practices (Farrell, 2003).

The need for better methods of IS and IT investment evaluation has arisen from problems such as the productivity paradox where existing measures fail to reveal the gains made from these investments. IS and IT investment evaluation may also be needed for project justification, project comparisons, control, learning, and competitive advantage. Similarly, different approaches to benefits realization are also needed. The benefits of IS and IT can only be fully realized when systems and available technology are applied to specific and relevant tasks, which in turn are aligned with the business strategy (Andresen et al., 2000). Moreover, recent research indicates that formal approaches are not often used (Lin & Pervan, 2003; Lin, Huang, & Tseng, 2007) and that the application of structure and discipline to the process will improve the measurement of IS and IT benefits in organizations and lead to more effective investment of organizations’ scarce

resources in key elements of information systems and technology.

Finally, the study took place at a particular point in time. Further research could be conducted to capture the opinions of respondents at various stages of the IS and IT project development process. Alternatively, our study could be replicated in a few years time to examine how IS and IT benefits realization and investment evaluation have changed and are being managed in light of emerging technologies such as e-commerce. Nevertheless, some key issues have been presented by the research and these may be helpful to practitioners and researchers in this field.

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## TERMS AND DEFINITIONS

**Benchmarking:** This refers to the identification of historical data against which a data set can be compared now and in the future.

**Cost-Benefit Analysis:** This is a technique or approach used to compare the various costs associated with the expected benefits.

**IT Benefits Realization:** It is a managed and controlled process of benchmarking, involving implementing and adjusting the expected results and continuously adjusting the path leading from IT investments to expected business benefits.

**IT Project:** This is an organizational initiative that employs or produces IT or IT-related assets.

**Organizational Memory:** It is also called corporate knowledge. It refers to the repository where hard data and soft information are stored for future use. The soft information can be in the form of tacit know-how, expertise, biases, experiences, and anecdotes.

**Performance Measurement:** Performance measurement involves the data that will be gathered, analyzed, reported, and utilized to make business decisions. It is also used to justify business spending, report progress toward established business objectives, and identify areas for improvement.

**Preinvestment Justification:** These are approaches or techniques that are used to assess organizations' potential IT investments before decisions are made to invest.