Chapter X

Using Cost Benefit Analysis for Enterprise Resource Planning Project Evaluation: A Case for Including Intangibles

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The goal of this chapter is to demonstrate how cost benefit analysis can be applied to large-scale ERP projects, and that these methods can incorporate the intangible benefits, e.g., user satisfaction. Detailed information on the business case utilized by a large computer manufacturer in their decision to implement the SAP system R/3 is presented. We illustrate how this organization utilized techniques to include intangibles in the implementation project's cost benefit analysis. The chapter concludes with a discussion on the state of valuing ERP projects and questions to be answered in the future.

INTRODUCTION

In 1998, expenditures for information technology (IT) accounted for more than 50% of corporations' annual capital investment in developed economies, and these outlays will average 5% of total corporate revenues by 2010 (Graeser, Willcocks, and Pisanias, 1998). Given the staggering amount of resources devoted to IT, $530 billion worldwide in 1995, one would expect managers to have a firm grasp of the anticipated contribution of their IT investments to the organization's profit margin. However, quantitative measurements of an IT project's expected return are not often used, primarily because they are unable to capture many of the qualitative and intangible benefits that are expected (Farbey, Land, and Targett, 1992). Still, managers must justify system investments, and hence "cost benefit analysis has assumed a pivotal position in the information systems revolution" (Sassone, 1988).

Information system project evaluation is challenging not because the projects cannot be justified but because they cannot be justified in terms which accountants and some senior managers are prepared to accept (Gunton, 1988). According to Mahmood and Szewczak (1999) the issue of measuring investments in IT is critical, these "measures may be

quantitative in nature, but they must also be qualitative as well." The problem has grown as IS departments have advanced beyond implementing transaction processing systems with returns that are relatively easily to quantify to the implementation of management information, decision support and knowledge management systems. Systems in the latter category produce measurable benefits that are fuzzy at best, and defy conventional methods for quantifying the benefits. The failure of traditional measures to adequately capture the true value of the information technology systems was observed in the early days of MIS as an academic discipline (McRea, 1970). This measurement dilemma has grown worse as IT becomes part of the organization's nervous system or infrastructure and is a critical part of its structures and processes where all elements are integrated assessing returns on individual assets is impractical. Moreover, such integrated systems will also be extremely valuable as repositories to aid in strategic decision making. In addition to the factors listed above there is still a widespread lack of understanding of IT and information systems as a major capital asset (Willcocks and Lester, 1999).

In today's dynamic and competitive environment, senior managers are demanding figures that derive an IT project's return before the project is undertaken. Therefore, CIOs and their IT staffs are beginning to rely on both tangible and intangible measures to determine a system's contribution to an organization's bottom line. This procedure is a new endeavor for many IT staffs especially as they struggle to convert intangible measures such as user satisfaction to a tangible quantity suitable for inclusion in cost benefit calculations. This study examines Consolidated Computer Company's (CCC)[1] efforts to determine the contribution of a proposed enterprise resource planning (ERP) system they are seeking approval to implement.

The first part of the chapter presents a brief introduction to ERP systems, followed by a section where we define and discuss methods for evaluating IT investments and provide some detail on a family of techniques known as cost benefit analysis (CBA). We then discuss the wide range of intangibles that may enter into CBA calculations which leads to the presentation of a method for including intangibles in a CBA setting. The latter part of the chapter presents a case study in which Consolidated Computer Company seeks to use CBA to justify the implementation of an ERP system and demonstrates how an intangible factor, user satisfaction, can be included in the analysis.

ERP SYSTEMS[2]

Enterprise Resource Planning (ERP) is a term used to describe business software that is 1) multifunctional in scope, 2) integrated in nature, and 3) modular in structure. An ERP software solution is appropriate when an organization is seeking the benefits of business process integration and contemporary best practices in its information system, looking for a full range of functionality throughout its organization, and seeking to limit its implementation and ongoing support costs (Norris et al., 1998). Historically, the market for ERP solutions has been large multinational manufacturing companies (revenues over \$1 billion) which operate in a discreet manufacturing environment. Today, however, the market is expanding to mid- (\$250 million to \$1 billion) and small- (under \$250 million) companies across a wide range of industry sectors. The market is dominated by SAP-AG of Germany which holds over 70% of the software market with their R/3 system.

ERP systems have their origins in Manufacturing Resource Planning (MRP) software with installations traditionally in large scale manufacturing facilities. Although recently the trend is to extend installations to industry sectors including telecommunications, government, insurance, gas and oil, and high-tech manufacturing. Firms implementing the software

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