Chapter 7
The Business Value of IT: A Conceptual Model for Understanding and Selecting Valuation Methods

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ABSTRACT
The relation between IT and value is a complex and often disputed one. Researchers and practitioners have created numerous models and valuation methods to capture this value, yet the advanced methods they have developed are hardly used. While these sophisticated instruments are based on scientific methods and empirical evidence, managers reject them, preferring to use methods they intuitively understand. What is missing that causes this mismatch? This chapter aims to add to the understanding of valuation methods by providing a comprehensive selection model for selecting the valuation method that fits the characteristics of the investment. The authors provide a categorized overview of valuation method and identify the qualities of and issues with each method or approach. They analyze how these methods can be combined in an investment selection process and identify the characteristics of an investment that determine the applicability of a given method. They conclude the paper by combining these characteristics in a decision tree shaped selection model to select the appropriate valuation method for any given set of characteristics.

INTRODUCTION
The business value of information technology (IT) is a topic that is cause for a lot of discussion (Stewart et al., 2007). Skepticism roars again in the boardrooms of many companies, as the e-business hype exploded in the face of many ‘believers’ of the new-economy gospel. Without strong technological developments to thrive upon and an uncertain economic perspective the pressure on IT budgets is high. For investments in IT the requirement of sufficient returns and a clear ‘business case’ is even more severe than before. Several surveys indicate that the issue of measuring benefits of IT investments is a concern in many organizations (Whitling et al., 1996). Measuring IT

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benefits and value is frequently reported as one of the most important issues for senior IT management. (Brancheau & Wetherbe, 1987; Niederman, Brancheau & Wetherbe, 1991).

Based on these notions, researchers and practitioners have created numerous models and valuation methods to capture this value (Frisk, 2007). Without claiming to be complete, Renkema and Berghout (1997) listed over 50 methods, and many more have been added since than. Nijland (2004) however concluded that more advanced methods are hardly used. Managers only use methods they intuitively understand. So where science is developing more sophisticated instruments, is practice turning its back to it. What is missing that causes this mismatch?

This chapter aims to add to the understanding of valuation methods by providing a comprehensive selection model for selecting the valuation method that fits the characteristics of the investment. Hereeto we will provide a categorized overview of valuation method and discuss the applicability of these methods in practice. We will then analyze how these methods can be combined in a investment selection process and identify the characteristics of an investment that determine the applicability of a certain method. We will conclude the paper by combining these characteristics in a decision tree shaped model that selects the appropriate valuation method for any given set of characteristics.

**Valuation Methods**

The valuation of investments is basically an economic issue for which it is irrelevant whether the investment is in IT or in any other resource. As long as the effects of the investment are understood, calculating the value of it is merely a financial technicality. This sounds almost too good to be true. Indeed, it is not quite that simple. Financial valuation methods all have assumptions and limitations, which caused both practitioners and academics to develop (e)valuation methods that consider more than just the financial aspects. After considering over 50 evaluation methods Renkema and Berghout (1997) grouped these methods into four categories: financial methods, multi-criteria methods, ratio methods and portfolio methods.

**Financial Methods**

The group Financial evaluation methods comprises of the traditional economic investment selection and valuation methods. Table 1 provides an overview of these valuation methods and their most important qualities and limitations.

The shortcomings of these methods are especially clear when IT investments are made that impact the organizations market proposition. In this arena it is hard to make informed decisions when many variables are in flux. Traditional calculation methods are all limited in their ability to cope with risk and managerial flexibility. For example if a project proves to be a success, it can be sped up. If however the market deteriorates, the investment outlays of the project can be lowered or postponed. Despite the logic of this, in reality management adapts plans based on actual conditions all the time, this flexibility is not adequately valued in any of the valuation methods mentioned earlier. The result is an inadequate decision process for new projects. In some cases this even results in competitive investment proposals being rejected. Therefore it is clear that companies need to come up with new ways of judging IT investments.

**Advanced Financial Methods**

A new insight is provided by the Real Options Valuation (ROV) theory (Trigeorgis, 1996). In the ROV an additional value is added on top of the Net Present Value (NPV) of a project. This ‘option value’ valuates the flexibility of the investment. Flexibility reflects the ability to alter the investment outlay and the timing of outlays based on