



Evaluating potential investments in new technologies: Balancing assessments of potential benefits with assessments of potential disbenefits, reliability and utilization

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Abstract

In recent years, the assessment of intangible benefits has become an explicit requirement of investment evaluation techniques. By contrast, assessments of three factors which can prevent the realization of any benefits have not become an explicit requirement. Those three factors are disbenefits, reliability and utilization. The importance of these factors may sometimes be identified prior to investment evaluation when exploratory methods such as contingency planning are used. However, evidence presented in this paper suggests that these three factors are often overlooked. Further, the evidence presented in this paper suggests that investment performance often suffers as a result. Accordingly, it is argued that investment evaluations need to be balanced by making assessments of disbenefits, reliability and utilization an explicit requirement. This argument is supported by reporting of experiences from action research. These experiences indicate that investment evaluations can be balanced by making assessments of disbenefits, reliability and utilization an explicit requirement.

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1. Introduction

In recent years, the assessment of intangible benefits has become an explicit requirement of investment evaluation techniques (Gerwin, 1988; Lillrank et al., 2001; Murphy and Simon, 2002; Slagmulder et al., 1995; Whiting et al., 1996). Previously, intangible benefits may sometimes have been identified as being important prior to investment evaluation when exploratory methods such as scenario analysis (Linneman and Kennell, 1977) were used. Nonetheless, the assessment of intangible benefits is now an explicit requirement of evaluation techniques.

By contrast, assessments of disbenefits, reliability and utilization have not become an explicit requirement of evaluation techniques. Yet, disbenefits, reliability problems and under utilization can prevent the realization of any benefits, whether tangible or intangible. For example, under utilization can thwart strategic initiatives which a new technology was intended to enable. Moreover, if an investment in a new technology is not utilized, it is not likely that it will yield a return on investment. In spite of their significance, assessments of these three critical performance factors are not an explicit requirement of financial evaluation techniques. Indeed, the term, disbenefit, was not found to be present within any existing evaluation technique.

The importance of these three critical performance factors may sometimes be identified prior to the application of evaluation techniques when exploratory methods such as contingency planning (Swanson et al., 2002) are used. However, evidence presented in this paper suggests that disbenefit, reliability and utilization issues are often overlooked. Further, the evidence presented in this paper suggests that investment performance often suffers as a result. Accordingly, it is argued that investment evaluations need to be balanced by making assessments of disbenefits, reliability and utilization an explicit requirement. This argument is supported by reporting of experiences from action research. These experiences indicate that investment evaluations can be balanced by making assessments of disbenefits, reliability and utilization an explicit requirement.

Many alternative techniques are available to support the financial evaluation of potential investments in new technologies. Existing evaluation techniques can be grouped into four categories: traditional capital investment appraisal techniques (CIAT); adjusted CIATs; new investment evaluation techniques; mixed investment evaluation techniques (Milis and Mercken, 2004). CIATs include Internal Rate of Return, Net Present Value, and Return On Investment. It has been argued for some time that such techniques are not well-suited to the evaluation of investments in technology (Dixit and Pindyck, 1994; Kumar, 1997). Adjusted CIATs include the incorporation of estimated intangible benefits from an investment (Whiting et al., 1996). New techniques include Real Options Analysis (Copeland and Antikarov, 2001). Mixed techniques include adaptations of the balanced scorecard (Buglione et al., 1999; Kaplan and Norton, 1992).

Potential investments in new technologies can be difficult to evaluate (Bacon, 1992; Clemons and Weber, 1990; Keen and Digrius, 2002; Putterill et al., 1996; Shank, 1996; Thatcher and Oliver, 2001). Nonetheless, review of existing evaluation techniques suggests that they do little to support the assessment of certain critical performance factors. Those being factors which can determine the performance of a new technology in use and, as a result, often determine returns from investments in that technology. In particular, exist-

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