A Framework Using ITIM to Guide IT Investments by State Governments

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ABSTRACT

The expenditures of funds on IT has continued to expand and a significant proportion of the expenditures are hidden, unaccounted, or never evaluated in terms of the business value derived from the expenditure. This paper focuses on the methods and means of creating a link between business requirements and the IT investments that can address those requirements. An ITIM framework is proposed, which addresses three key elements of ITIM: what decisions are to be made, who should make the decisions, and how decisions are to be made and monitored. ITIM is a management process that provides for the identification (pre-selection), selection, control, and evaluation of business driven IT investments across the investment lifecycle. ITIM uses structured processes to minimize risks and maximize return on investments. Additionally, a high-level ITIM implementation plan is discussed.

Keywords: Business Value, Expenditures, Funds, Information Technology, ITIM, ITIM Framework

INTRODUCTION

As the demands and expectations of citizens for services and information from the public sector have grown, the expenditure of funds on Information Technology (IT) has continued to expand and a significant proportion of the expenditures are hidden, unaccounted for, or never evaluated in terms of the business value derived from the expenditure (Caudle, Gorr, & Newcomer, 1991). For public sector organizations committed to improving strategic planning processes and outcomes, a critical component of strategic planning is deciding how IT can best support the execution of strategic business plans (Benaroch, Jeffery, Kauffman, & Shah, 2007; United States Government Accountability office, 2004; Wu, 2008). IT investments are costly and it is important to fund IT initiatives that best support the strategic goals and objectives defined by the business strategic planning process (Bajjaly, 1999; Bretschneider, 1990). While some argue that IT cannot contribute to a strategic advantage (Carr, 2003), most authors support the importance (Hitt & Brynjolfsson, 1996; United States Government Accountability Office, n.d.). An Information Technology Investment Management (ITIM) process provides an integrated approach to the identification (pre-selection), selection, control, and evaluation of...
IT investments across the investment lifecycle. The proposed ITIM framework is based on:

- The recognition that the business strategic planning process drives technology investment strategies;
- The concept that technology investments support and add value to the business of state government; and,
- The premise that technology investments should be prioritized, executed, and measured based on the benefits related to achieving business strategic goals and objectives.

This work focuses on the methods and means of creating a linkage between business requirements and the information technology investments that can address those requirements. An ITIM framework is proposed, which addresses three key elements of ITIM: what decisions are to be made, who should make the decisions, and how decisions are to be made and monitored. Additionally, a high-level ITIM implementation plan is discussed.

BACKGROUND

Information Technology Investment Management (ITIM) traces its roots to the 1952 work of Harry Markowitz on Portfolio Selection (Markowitz, 1952). In this work, Markowitz proposed a new theory of financial investing based on a portfolio of investments balanced by a number of factors, with expected return, diversification, and risk being primary. Markowitz suggested that a portfolio with the proper balance of investments provided a higher return over time to the investor than simply evaluating each investment on its own merits. This theory is now referred to as Modern Portfolio Theory (MPT) and Markowitz received a Nobel Prize in 1990 for his work. MPT makes four key assumptions:

- A rational investor chooses greater value over less value.
- A rational investor chooses less risk over more risk.
- An investment goal may be supported by more than one optimal portfolio.
- The probability of success increases over time with diversification.

In financial markets, it is now standard and accepted practice to apply MPT to the development of investment instruments. Most retirement plans for example offer one or more versions of an investment strategy based on MPT.

In 1981, Warren McFarlan (1981) applied the concepts of MPT to evaluating and selecting information systems projects and development initiative. McFarlan focused on the area of risk assessment at both the project and portfolio level and noted that risk is inherent in any project or portfolio and, in and of itself, risk is neither good nor bad. It is the determination of the degree of risk and the risk compared to the potential reward that are the critical factors in project selection. At the portfolio level, a balance of risks should exist across all projects with some projects having low risk factors and other having higher risk. It is the balancing of risk that generates the highest return over time with an IT investment portfolio.

McFarlan’s portfolio view of information technology projects as investments to be managed has been developed and enhanced over the last 25 years and is now the generally accepted model for technology investments in the private sector. However, it is interesting to note that in a 1986 survey article on IT and corporate strategy (Bakos & Treacy, 1986), no mention of portfolio development was described and MPT was not identified as an emerging model or general theory that could provide direction and insight into IT management and corporate strategy. The existence of information technology in government applications was not mentioned at all.

Portfolio management focuses on the strategic business goals of the organization and aggregate performance of the portfolio components rather than simply one or two
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