

## Chapter 1.2

# Information Technology Portfolio Management: Literature Review, Framework, and Research Issues

**Ram Kumar**

*University of North Carolina-Charlotte, USA*

**Haya Ajjan**

*University of North Carolina-Charlotte, USA*

**Yuan Niu**

*University of North Carolina-Charlotte, USA*

### ABSTRACT

There is significant interest in managing IT resources as a portfolio of assets. The concept of IT portfolio management (ITPM) is relatively new, compared to portfolio management in the context of finance, new product development (NPD), and research and development (R&D). This article compares ITPM with other types of portfolio management, and develops an improved understanding of IT assets and their characteristics. It presents a process-oriented framework for identifying critical ITPM decision stages. The proposed framework can be used by managers as well as researchers.

### INTRODUCTION

IT investments constitute a major portion of organizations' capital budgets in many organizations (Jeffery & Leliveld, 2004). However, some authors question the business value of IT (Carr, 2003), and the actual contribution of IT to organizational performance is the subject of debate (Kohli & Devaraj, 2003). IT managers are constantly under pressure to justify their IT investments and demonstrate the business value of IT. For most companies, selecting a project that would fit the corporate strategy—and therefore maximize the business value—is a challenging process (Jeffery & Leliveld, 2004). In addition, the high failure rate

of IT projects in many organizations is a cause for concern. A study by Standish Group showed that only 28% of IT projects succeed in 2004, compared to 34% a year earlier (Hayes, 2004).

Hence, there has been significant interest in effective management of information technology investments (Cimral & Lawler, 2002; Datz, 2003; Jeffery & Leliveld, 2004; Reyck, Grushka-Cockayne, Lockett, Calderini, Moura, & Sloper, 2005). Organizations recognize that they have portfolios of IT assets. Each component of the portfolio (e.g., applications, projects, and infrastructure) serves a different purpose and needs to be managed differently, while recognizing the interdependencies between these components. Several organizations have undertaken IT portfolio management (ITPM) projects (Datz, 2003; Jeffery & Leliveld, 2004; Weill & Vitale, 1999). An increasing number of vendors and consultants offering ITPM products, services, and books are beginning to appear (Fitzpatrick, 2005; Maizlish & Handler, 2005). However, organizations have different maturity levels when it comes to implementing ITPM (Jeffery & Leliveld, 2004). There are significant additional benefits that can be obtained from better understanding and implementation of ITPM (Weill & Aral, 2006).

From a research perspective, there are several studies that address portfolio management. These research studies span diverse fields, such as new product development (NPD) (Cooper, Edgett, & Kleinschmidt, 1997, 1999), research and development (R&D) (Dickinson, Thornton, & Graves, 2001), financial portfolio management (FPM) (Reilly & Brown, 2002), and IT (Jeffery & Leliveld, 2004). However, an analysis of similarities and differences between ITPM and other types of portfolio management is lacking in the literature. Such an analysis would help researchers, as well as managers, apply ideas from other types of portfolio management that can be used for ITPM.

From an MIS perspective, there are very few studies directly related to ITPM (Jeffery

& Leliveld, 2004; Weill & Aral, 2006; Weill & Vitale, 1999). ITPM as a concept remains underdeveloped. However, there are several streams of research that seem to be relevant to ITPM. These include business values of IT (Devaraj & Kohli, 2003), IT project management (Wallace & Keil, 2004; Wallace, Keil, & Rai, 2004), IT adoption and use (Jaspersen, Carter, & Zmud, 2005; Venkatesh, Morris, Davis, & Davis, 2003), IT success (DeLone & McLean, 2003), strategic use of IT (Bhatt & Grover, 2005; Piccoli & Ives, 2005), strategic IS planning (Grover & Segars, 2005), business process change (Kettinger & Grover, 1995), and others. Hence, there is a need to better understand how these streams of research are related to ITPM, and further develop ITPM from a research perspective.

This article views an organization's IT portfolio as comprising a set of assets: IT infrastructure assets (the hardware and software that support IT applications such as servers, workstations, database software, and network infrastructure), application assets, project assets, and IT-related human resource assets. This view of the IT portfolio mirrors the way many organizations manage their IT assets, and is discussed in Section 3. Application, infrastructure, and project components of the IT portfolio are the focus of this article, since managing the human component of the IT portfolio is an important topic in its own right.

Jeffrey and Leliveld (2004, p. 41) define ITPM as "managing IT as a portfolio of assets, similar to a financial portfolio, and striving to improve the performance of a portfolio by balancing risk and return." This article views ITPM as *a continuous process to manage IT project, application, and infrastructure assets and their interdependencies, in order to maximize portfolio benefits, minimize risk and cost, and ensure alignment with organizational strategy over the long run*. This view of ITPM specifically recognizes different types of IT assets, the continuous process nature of ITPM, and identifies major dimensions (alignment, benefits, costs, risks, and interdependencies)

23 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/information-technology-portfolio-management/54469](http://www.igi-global.com/chapter/information-technology-portfolio-management/54469)

## Related Content

---

### Situated Method Engineering

Kees Van Slooten (1996). *Information Resources Management Journal* (pp. 24-31).

[www.irma-international.org/article/situated-method-engineering/51026](http://www.irma-international.org/article/situated-method-engineering/51026)

### IS Project Management Contemporary Research Challenges

Maggie McPherson (2009). *Encyclopedia of Information Science and Technology, Second Edition* (pp. 2254-2259).

[www.irma-international.org/chapter/project-management-contemporary-research-challenges/13895](http://www.irma-international.org/chapter/project-management-contemporary-research-challenges/13895)

### Data-Driven Trend Forecasting in Stock Market Using Machine Learning Techniques

Puneet Misra and Siddharth Chaurasia (2020). *Journal of Information Technology Research* (pp. 130-149).

[www.irma-international.org/article/data-driven-trend-forecasting-in-stock-market-using-machine-learning-techniques/240726](http://www.irma-international.org/article/data-driven-trend-forecasting-in-stock-market-using-machine-learning-techniques/240726)

### A Teaching Case for a Distance Learning Course: Teaching Digital Image Processing

Yu-Jin Zhang (2007). *Journal of Cases on Information Technology* (pp. 30-39).

[www.irma-international.org/article/teaching-case-distance-learning-course/3211](http://www.irma-international.org/article/teaching-case-distance-learning-course/3211)

### The Cloud Computing as the Tool for Implementation of Virtual Organization Technology for eHealth

Ekaterine Kldiashvili (2012). *Journal of Information Technology Research* (pp. 18-34).

[www.irma-international.org/article/cloud-computing-tool-implementation-virtual/69507](http://www.irma-international.org/article/cloud-computing-tool-implementation-virtual/69507)