

MANAGING THE IT PORTFOLIO (UPDATE CIRCA 2005): WHERE DID THE INFRASTRUCTURE GO?¹

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Why Use Portfolios for IT

Just as investors address their multiple objectives using portfolios of financial investments, firms have portfolios of information technology (IT) investments. Four different management objectives guide firms' investment in IT and each objective results in a different IT asset class with a unique risk-return profile. Just like any other investment portfolio, the IT portfolio must be balanced to achieve alignment with the strategy and the desired combination of risk and short and long term pay off. This briefing presents 2005 benchmarks for IT portfolios.

Four Management Objectives Leading to Four IT Asset Classes

Our research found that business leaders have four different management objectives for investing in IT:

- *Transactional*—cut costs or increase throughput typically by automating the repetitive transactions of the firm (e.g., a trade processing system for a brokerage firm);
- *Informational*—provide information for any purpose including to account, manage, control, report, communicate, comply or analyze (e.g., sales analysis, six sigma, government reporting);

¹ This briefing is part of a series on IT portfolios. Previous briefings have introduced the concept of the IT Portfolio and its four asset classes (March 2003), identified the returns from each IT asset class (March 2004), demonstrated the impact of IT savvy on financial performance (October 2004) and illustrated the differences between high and low IT savvy via two case studies (July 2005). This research draws on and extends the material on IT portfolios in *Leveraging the New Infrastructure: How market leaders capitalize on IT* by Peter Weill and Marianne Broadbent, Harvard Business School Press, 1998. This research was made possible by the support of MIT CISR sponsors and the National Science Foundation, grant number IIS-0085725.

- *Strategic*—gain competitive advantage or position in the market place (e.g., ATMs were initially very successful in increasing market share for the innovating banks and then became transactional);
- *Infrastructure*—provides the foundation of shared IT services used by multiple applications (e.g., servers, networks, laptops, customer databases—excludes applications). Infrastructure investments often must be made in anticipation of future business needs.

Investments in the four management objectives become an IT portfolio with four asset classes (see Figure 1). Infrastructure is the base of the portfolio providing IT capability to support the applications above. In 2005 the average firm in our study of 640 firms allocated 46% of its total IT investment to infrastructure.² Transactional systems utilize the IT infrastructure and account for 26% of average 2005 IT investment. The informational systems typically build on both the transactional and infrastructure capability, accounting for 17% of IT investment. Similarly, strategic systems often also build on both the transactional and infrastructure systems and account for 11% of total average IT investment.

Any particular project or system can span more than one management objective depending on the combination of its strategic goals and the installed IT base. For example, senior managers of a large technology firm investing in a CRM system to better understand their customer segments identified the breakdown as 60% informational, 25% transactional, 5% strategic and 10% infrastructure. CRM was well established in the industry and no longer a competitive advantage but was expected to reduce cost and to provide better customer information. Much of the needed infrastructure for the CRM already existed.

Using Portfolios to Manage IT Investments

Typically IT portfolios are used by senior management teams, IT investment committees and IT budgeting processes to analyze the business' proposed IT

² The total IT investment includes all centralized and decentralized IT spend (expenses and depreciated capital) both insourced and outsourced plus all people dedicated to IT services and management.

investment. The dollars for each IT project are allocated by percentages into the four asset classes and consolidated in a single portfolio for the business unit or firm. Senior management analyzes the portfolios, assessing fit with both strategy and risk profile. Opportunities for sharing and reuse are identified.

Typical portfolios vary by industry and strategic objective. Figure 1 shows the average portfolios by industry and government with details on portfolio size and asset class mix. To use portfolios, we suggest a firm classify its planned IT investment into the four asset classes and then analyze its relative position. Questionnaires are available from MIT CISR to classify a business' IT investment. Compare the proposed portfolio to the appropriate industry portfolio in Figure 1 and ask: *Can we explain the difference between our portfolio size and allocation and the industry average by our strategy?* If the answer is yes, senior management will be more confident of good alignment between strategy and IT investments. Interestingly, the differences in IT investment allocation between industries are relatively small while the size of the portfolio (i.e., \$IT as a percent of total expenses) varies widely.

What Happened to the Infrastructure?

Figure 1 also shows IT portfolio data from two earlier time periods: 2001 and 1993–7. The differences are significant. From the nineties to 2001 to 2005 the percent of the total IT investment in infrastructure dropped from 57% to 54% to 46%. Yet over the period 2000 to 2005 IT investments as a percent of revenues was virtually flat. What happened to the infrastructure? After studying the data and talking to companies who both buy and sell IT, we offer the following explanations in decreasing order of posited impact—these conclusions have not yet been tested statistically.

Architecture Maturity: MIT CISR research has identified changes in IT investment patterns according to a company's enterprise architecture maturity. As companies attempt to abandon a silo approach to developing IT solutions, the first step is infrastructure standardization and consolidation (see July 2004 CISR briefing on Enterprise Architecture maturity).

For example, Carlson Companies is a \$20+ billion company in the marketing, hospitality and travel business. Carlson's portfolio includes Radisson Hotels, T.G.I. Friday's restaurants, Carlson Marketing Group, Carlson Wagonlit Travel, Radisson Seven Seas Cruises and the Gold Points Reward Network. Even though these companies are run autonomously, Carlson has captured cost savings and synergies with a world-class shared services capability, which was

awarded the 2004 International Productivity and Quality Council's (IPQC) award for the "best mature shared services organization."

In 2004, 48% of companies we studied were in the throes of standardizing technology. As these companies achieve the desired efficiencies, they shift spending from infrastructure into enterprise systems, which focuses more spending on transaction processing.

Price performance improvements: Moore's Law keeps on working with the cost of storage and processing reducing every year. The same effect, perhaps even at a faster rate, has occurred with network capacity. The impact on firm IT infrastructure costs is not as dramatic since every new application soaks up comparatively more capacity than before as we move to video, automated data collections (e.g., clicks, point of sale), etc.

Reweighting Portfolios to Cost Savings: For many reasons, since 2000 enterprises have shifted in their focus to cost cutting. In response, IT portfolios have been strongly re-weighted towards transactional IT with an almost unprecedented doubling from 13 to 26%. Interestingly, the percent of IT spend in the high risk high return asset class (i.e., Strategic IT) has only dropped slightly from 14% (1990s), 13% (2001) to 11% (2005). The so called bursting of the Internet bubble has not resulted in any lack of confidence in using IT to gain competitive advantage in larger firms despite the demise of many dot com startups. The re-weighting towards transactional IT has come mostly from a reduction in IT infrastructure.

Interoperability: Over the period 1994–2005, there have been significant increases in interoperability between infrastructure and applications provided by different vendors. TCP/IP and web based standards have moved us several steps forward to the 'plug and play' world. We are still nowhere near completely interoperable, particularly with data captured in different systems. The recent need to increase system security has often slowed down progress to interoperability.

Business Process Outsourcing: The worldwide market for outsourcing has increased from \$248B in 2000 to \$449B in 2005 and will continue to grow with an estimated 16% of IT services provided remotely today.³ Services include business processes such as accounting, information systems maintenance and graphics production. Higher level proc-

³ Source: Jeff Sampler, Oxford University and "A World of Work," *The Economist*, November 11, 2004.

esses include insurance claims, and IT product/application development and engineering design. Even higher value added processes include equity research, market research, underwriting and medical diagnosis (e.g., radiography analysis by doctors). All of these processes are now successfully offered as outsourced services by Indian firms and will likely increase in the next 10 years. In a pure BPO model the client's infrastructure focuses on integration of internal and external processes. BPO eliminates the need for infrastructure supporting individual outsourced business processes. Again, IT costs are shifted from infrastructure to the transactions embedded in the BPO.

What Will Future IT Portfolios Look Like?

Looking ahead by extrapolating these five explanations (all of which are moving at different rates)—a most unreliable practice at best—we posit the following:

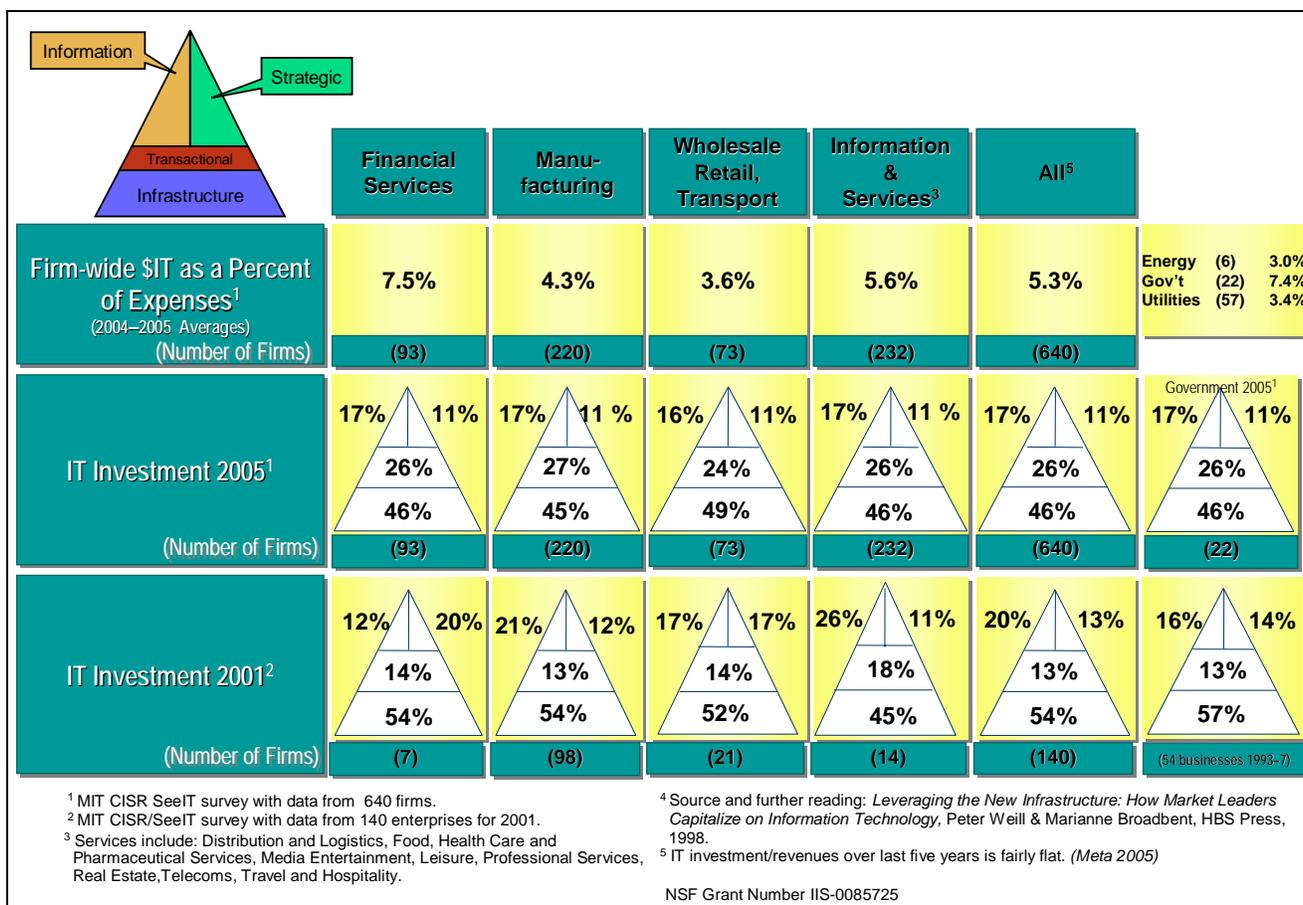
- IT spend (including outsourcing) as a percent of revenues will remain flat on average with "IT

savvy firms investing more than their competitors confident of above average returns (see October 2005 briefing on IT Savvy).

- IT infrastructure spend as a percent of revenues may see some additional decline from further efficiencies. But we expect it will stabilize in a few years as companies rely on infrastructure to provide the stable platform for their modular business components.
- Efficiencies in IT infrastructure and better IT governance will enable firms to reduce the percent of IT spent on sustaining the current systems (often as high as 70% of the total IT budget) to be as low as 50% as we see in a few firms today. Moving that much of the IT budget from sustaining to creating new value is a real source of competitive advantage for the next five years.

Whatever the future, the familiar management tool of a financial portfolio provides a powerful commercial lens through which to manage IT investments.

Figure 1: IT Portfolios in Different Industries



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- IT-Enabled Business Change

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