

MANAGING THE IT PORTFOLIO (UPDATE CIRCA 2003)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. 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 business strategy and the desired combination of short and long term pay off. This briefing describes the management of IT investment as a portfolio and presents new benchmarks of IT portfolios. The familiar management tool of a financial portfolio provides a powerful commercial lens through which to manage IT investments.

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 for the same cost (e.g., a trade processing system for a brokerage firm);
- **Informational**—provide information for any purpose including to account, manage, control, report, communicate, collaborate or analyze (e.g., a sales reporting and analysis system);

¹ This CISR briefing is the first of two on IT portfolios in 2002. The next briefing "IT Portfolios and Firm Performance" will be completed later this year. 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 with a CISR study of 147 firms in 2002. This research was made possible by the support of CISR sponsors, in particular, CISR patron Microsoft 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);
- **Infrastructure**—provides the foundation of shared IT services used by multiple applications (e.g. servers, networks, laptops, customer databases). Depending on the service, infrastructure investments are made with the objective of either reducing IT costs via consolidation providing a flexible base for future business initiatives. 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. The average firm allocates 54% of its total IT investment each year to infrastructure.² Transactional systems utilize the IT infrastructure and account for 13% of average IT investment. The marginal cost to implement a particular transactional system such as a web services based travel ordering and processing system will depend on the capability of the installed infrastructure. If the web services exist in the infrastructure, the project cost will be much smaller than if the web services have to be implemented first. The informational systems typically summarize the transactional systems and provide communication or collaboration facilities, often including data from outside the firm (e.g., industry trends or competitor sales). The informational systems sit on top of, and use both the transactional and infrastructure systems, accounting for 20% of average IT investment. Similarly, strategic systems use both the transactional and infrastructure systems and account for 13% of total average IT investment. Interestingly since 1994, through many fluctuations in

²Based on a study of 147 firms in 2001/2. 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. The percentage of the total IT investment allocated to infrastructure dropped from 57% in 1994–7 to 54% in 2001 probably due to a combination of the availability of more cost effective infrastructure and less duplication within firms as they provide more shared IT infrastructure services.

economic conditions, the percentage of IT portfolio that firms allocate to this high risk, high return asset class hasn't changed (see Figure 2). In 2003, firms still see the same potential to gain competitive advantage from IT enabled initiatives as they have at any time over the last 10 years. The four asset classes (as we will discuss in detail in the next briefing) have different risk/return profiles with risk and potential returns increasing from transactional (reliable/modest returns) to informational to infrastructure to strategic (high risk/high potential returns).

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 software 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. Another firm implemented exactly the same CRM product but had different management objectives and needed more new infrastructure. This resulted in a completely different categorization with 20% informational, 10% transactional, 40% strategic and 30% infrastructure. The second firm operated in an industry where CRM was new and thus a potential competitive advantage. Therefore, exactly the same technology can have different management objectives in different firms—the portfolio approach thus adds a firm's business perspective to its IT investments.

Systems also change over time. ATMs were a very successful strategic IT initiative in 1984. After competitors emulated the offerings, ATM investments became transactional, reducing processing costs relative to a bank branch (circa 1994). Today ATMs have evolved into infrastructures with some banks specializing in providing the network and charging fees for use by competitors and their customers. Thus a firm's asset class percentages in their IT portfolio today will be different from the portfolio five years ago, even if they contain the same systems.

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 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 strategy and risk profile. Opportunities for sharing and reuse are also identified.

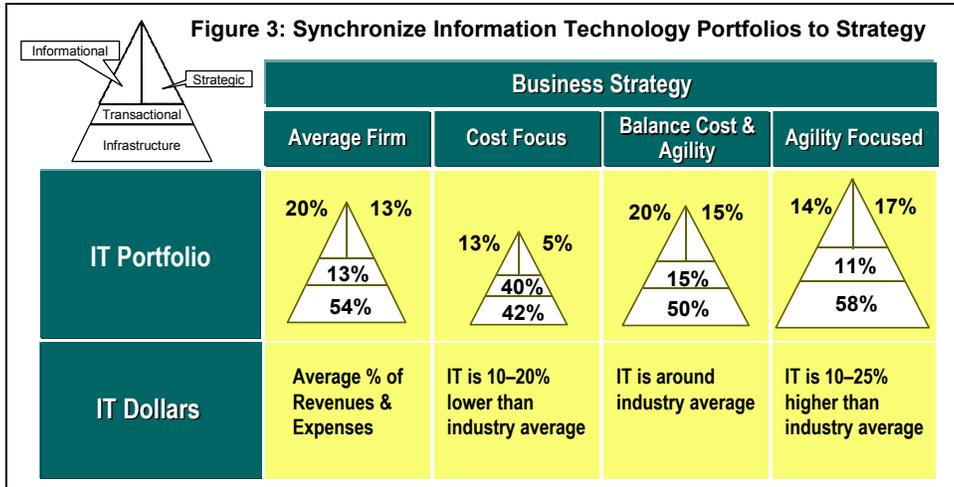
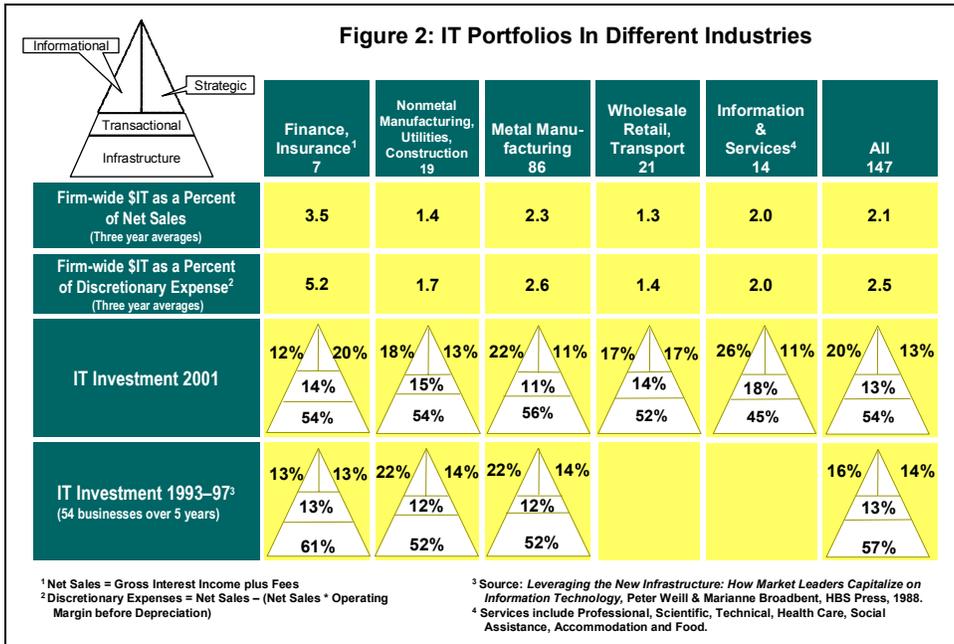
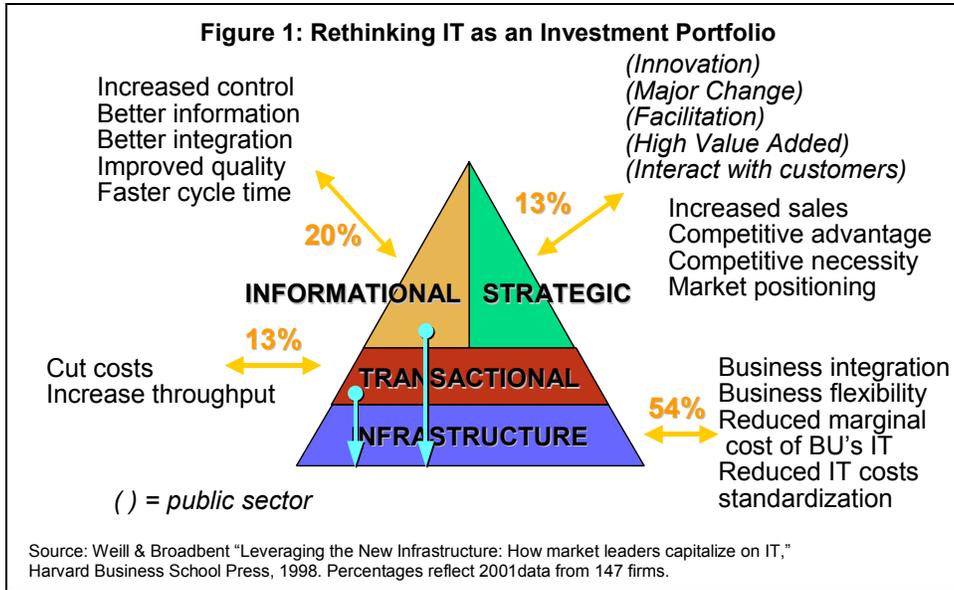
Typical portfolios vary by industry and strategic objective. Figure 2 shows the average portfolios by industry

with details on portfolio size and asset class mix. Figure 3 provides benchmarks by broad based strategic objectives. 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 CISR to classify a business' IT investment. For example, an insurance firm plans to invest 3% of gross revenues in IT in 2003 with a portfolio of 40% infrastructure, 40% transactional, 15% informational and 5% strategic. Compare this portfolio to the average financial portfolio in Figure 2 and ask the following question: *Can you explain the difference between your portfolio and the industry average by your strategy?* If the insurance firm has a low cost strategy competing on price then this IT portfolio looks well aligned. The insurance firm spends less than the industry average on IT, is under-weight (i.e. under investing) in infrastructure (with a long-term payoff) and over-weight in transactional (with a short term low risk payoff) that is a good fit with its low cost strategy. Their informational investment is in line with industry average but is focused on systems to control costs and they invest little in the higher risk strategic asset class. However, if the insurance firm's strategy is focused on innovation and fast time-to-market with new products and services, their IT portfolio allocation would be concerning.

A number of firms have adopted and adapted the portfolio approach to their needs and internal language including banks, manufacturers and brokerage firms, all with the objective of engaging the business leaders in IT investment decisions. For example, Dan Garrow, the CIO of Mohegan Sun, a Connecticut-based casino, implemented IT portfolios. Dan reflects on the experience

"The concept of managing our work based on a portfolio approach intrigued us. Comparing our strategy against our plans for expenditures in each of the four management objectives for investments, we realized there was a disconnect between our long-range plans and our resource allocations, both human and financial. Portfolio thinking helped us bring the day-to-day activities back into alignment with our long range objectives."

In these tough economic times many firms are re-weighting their IT portfolios towards more predictable, cost-saving-oriented, transactional systems. Other firms are looking to infrastructure consolidation and outsourcing to reduce IT costs leaving more of the budget for new informational and strategic applications. Portfolio approaches provide a business-oriented lens through which to make and debate IT investment decisions.



CISR MISSION

CISR was founded in 1974 and has a strong track record of practice based research on the management of information technology. As we enter the twenty-first century, CISR's mission is to perform practical empirical research on how firms generate business value from IT. CISR disseminates this research via electronic research briefings, working papers, research workshops and executive education. Recent and current research topics include:

2002 Projects

- The IT Portfolio – Benchmarks & Performance
- Assessing IT Governance Effectiveness
- Architecture-Driven Business Strategies
- Converting Customer Data into an Asset
- Strategies for Web Service

2003 Projects

- Business Models and IT Investments
- Governing IT for Different Performance Goals
- Assessing Architecture Outcomes
- Infrastructure as Variable Cost
- Managing IT Related Risks

CISR has recently embarked upon a new phase of industry-sponsored research, under the leadership of Peter Weill. Peter comes to CISR from Melbourne Business School and brings a strong practical research background in IT portfolio and IT infrastructure management.

CISR is co-located with MIT Sloan's e-Business@MIT initiative and the Center for Coordination Science to facilitate collaboration.

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