Part I

The Effective IT Organization

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The IT Dilemma

Dilemma: A situation that requires a choice between options that are or seem equally unfavorable or mutually exclusive.

—American Heritage Dictionary[1]

You're damned if you do, and damned if you don't.

—Eleanor Roosevelt[2]

Several years ago, we were taking a brief vacation with our families. Like any good technology consultants, we were never far from our mobile phones. The call came from an acquaintance, the chief operating officer of a mid-size company based in the Southeast. He knew we were on vacation, but he really wanted to talk . . . now. His story came out in a rush:

> I tell you, I've completely had it with my IT department. We have a tremendous number of business initiatives that rely on technology projects in the IT department. Not only have we lost the chance to get ahead of the competition, but we are falling behind because the IT department can't seem to finish anything. We have a list of over 150 projects and no one seems to know what the status is or who is in charge. I can't remember the last time one was completed. The entire executive team has lost confidence in IT.
>
> Every time I ask how I can help the IT department, they come back with additional headcount or capital expenditure requests. Now the IT budget is twice what it was two years ago, and the headcount has doubled, too. I think our costs are way out of line. I can't see a light at the end of the tunnel, but I don't know enough about technology to understand the issues and get out of this mess either.

We responded with some anecdotes from previous work with clients in similar situations. After listening to a few of these, the COO responded, "It's almost like you were here. This is a relief—the fact that you are so familiar with the symptoms means you probably know the cure. See you Monday."

This was not the first, nor the last, call that we received from an exasperated senior executive whose IT department had grown into an uncontrollable

tar pit of backed-up projects, miserable staffers, and frustrated business users—all set against a backdrop of never-ending spending increases for additional staff, services, equipment, and software. This scenario, with no light at the end of the tunnel, is usually when we hear from senior managers who later become our best clients.

This call resulted in an engagement that allowed us to help the client dramatically, measurably improving the company's IT operations and project completion rate, while, at the same time, reducing their overall IT spending significantly. That project, and the multiple similar engagements that preceded and followed it, were the basis for some serious contemplation. We had been fortunate enough to help lead a variety of clients through the improvement of their IT departments. Our client base covers a disparate array of geographies, industries, and technologies. Nevertheless, in each case the symptoms and causes of problems in the IT department are common.

Our experiences begged the questions: What is it about IT departments that seem to so often result in such unproductive relationships with senior management? Why do successful corporate senior management teams, who manage every other aspect of their businesses with incredible acumen and ability, turn into confused neophytes when it comes to managing IT? Why do IT managers have so much trouble communicating with the senior management team? If IT departments are so bad, why are they tolerated and even given enormous spending power? And, most important, how can IT managers learn to avoid being the victims of this phenomenon, and how can senior managers learn to work with the IT team so that the organization can avoid all of the torment and pain we have observed?

Our insights on these questions, and a set of specific, actionable prescriptions, are the subject of this book. We have based this book on our experiences working with clients with 1,000-member IT departments and 10-member IT departments; from industries ranging from retailing, to manufacturing, to services; and from IT budgets ranging from under $1 million to well over $100 million. We are fortunate to have had smart, forward-thinking, action-oriented clients who have moved aggressively with us to implement our recommendations; therefore, we can assert with field-tested confidence that our methods produce real, quantifiable results. We hope that you derive as much enjoyment and value from our findings and approaches as we have had in creating, executing, and documenting them.

What Good Is Information Technology?

Most companies ought to use technology in their business and have an IT department to support it. This appears to be an obvious statement. However, it is worth recognizing that, in the memories of more than half the working population of the United States, a company department organized solely around in-

formation technology was unheard of. The IT department has evolved from a narrowly focused data processing element of the accounting department to a function that supports and, in many cases, drives, nearly every area of a company. This has happened in a mere 45 years. Stand-alone IT departments are a relatively recent development. The number of people working in technology-related jobs grew six times faster between 1983 and 1998 than the U.S. workforce at large. Information technology-related industries doubled their share of the U.S. economy between 1977 and 1998. Practically overnight, technology-related services have become a global, trillion-dollar industry.[3]

The principal driver behind this remarkable, rapid creation of a vibrant, sophisticated, and enormous industry and the attendant inclusion of a department dedicated to it in every credible company, is the quest for business productivity improvement. Susan Schmidt Bies of the Federal Reserve Board put it well: "Productivity growth receives a considerable amount of attention . . . because its rate is an important determinant of a nation's standard of living."[4] Better productivity means that businesses can produce more with the same or fewer labor and capital inputs.

The notion of technology investments as a driver of U.S. business productivity has a controversial history. The benefits of technology investments (and IT departments) were not always so apparent. Productivity growth in the United States faltered from the mid-1970s through the early 1990s,[5] in spite of large technology investments from most major U.S. corporations. The disconnect between heavy capital and expense investment and the theoretically associated improvements in productivity led to a so-called *productivity paradox.* In reaction to the failure of large IT capital investments to produce the expected productivity gains, MIT Nobel Laureate Robert Solow famously remarked in 1987, "You can see the computer age everywhere but in the productivity statistics."[6] More recent research suggests that the productivity benefits from the deployment of technology have had a massive, albeit delayed, impact on the U.S. and world economy.[7]

A variety of researchers have concluded that investments in IT have been instrumental in the improved productivity seen in the U.S. economy beginning in the mid-1990s, and accelerating starting in 2000. In early 2000, the Federal Reserve gave information technology investments credit for approximately $50 billion in productivity improvement, which represents more than 65 percent of the total $70 billion in productivity gains seen by businesses in the United States in the last half of the 1990s[8] (see Exhibit 1.1).

The Federal Reserve staff report, by Kevin J. Stiroh, concluded, "Industry-level data show a broad productivity resurgence that reflects both the production and the use of IT. The most IT-intensive industries experienced significantly larger productivity gains than other industries." The report went even further, attributing most of the productivity improvement to technology. "Results show that virtually all of the aggregate productivity acceleration can be traced to the industries that either produce IT or use IT most intensively."[9]

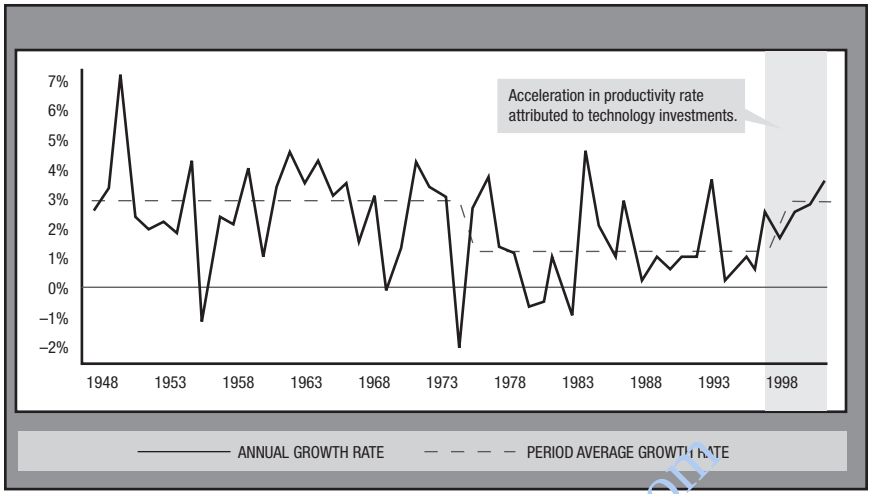

Exhibit 1.1 U.S. Productivity Growth, 1947 to 2000 (*Source:* Federal Reserve Bank of New York, staff report, no. 115, January 24, 2001.)

Business 2.0 magazine summarized the turnabout in top economic thinkers' viewpoints on the productivity gains from technology, saying that those gains:

> materialized in force beginning in 1995. What followed was a five-year run in which productivity grew an astonishing 2.8 percent a year, or double the rate of the previous two decades. (The numbers may sound small, but at 2.8 percent, living standards double every 25 years; at 1.4 percent, they double every 50.)[10]

In 2002, Solow went on record saying " . . . the paradox has dissipated in part"[11] and a Federal Reserve white paper noted that " . . . the U.S. economy has become highly dependent on information technology as the driving force in continued growth."[12]

Laura D'Andrea Tyson, dean of the Haas School of Business at the University of California, and former National Economic Advisor in the Clinton administration, emphasized the point as well, writing in *BusinessWeek:*

> The productivity numbers tell the most convincing story. According to a recent study by the Council of Economic Advisors, labor productivity accelerated by 1.6 percentage points from 1995 to 2000, compared with its growth from 1973 to 1995. The lion's share of this acceleration stemmed from more investment in information technology and the efficiency improvements made possible by this technology.[13]

In a speech before the Boston College Conference on the New Economy, Federal Reserve Chairman Alan Greenspan, a former skeptic, remarked that the "source of [the U.S. markets'] spectacular performance [is] the revolution in information technology."[14] Former Secretary of Labor Robert Reich says that it should now be obvious that "the extraordinary productivity im-

provement [is] generated primarily by information technology," which has been "the driving force behind this economy."[15]

Leading researcher Erik Brynjolfsson of the Massachusetts Institute of Technology has spent nearly a decade researching the link between technology investment and business benefit. Along with Lorin Hitt of the Wharton School at the University of Pennsylvania, Brynjolfsson has also concluded that investment in information technology has been responsible for major productivity improvements in corporate environments. Brynjolfsson says that "firms that invest more in IT have greater productivity improvements, and productivity continues to improve over time."[16] Additional evidence came in a 2003 study by O'Mahoney and Van Ark that concluded that industries that were intensive technology users improved their annual growth rate from 1.2 percent in the early 1990s to 4.7 percent from 1995 to 2001. Non-technology sectors experienced a net negative 0.5 percent change during the same period.[17] Use of technology appeared to be a significant differentiator.

More recent data from 2000 through 2005 continue to support this notion. The Bureau of Labor Statistics shows that the 2000 to 2005 period not only showed sustained productivity increases, but that productivity continue to accelerate, moving from the mid-2-percent range to 3.3 percent, and a whopping 5 percent in the manufacturing sector, which is arguably one of the biggest beneficiaries of the extensive IT capital investments of the 1990s (Exhibit 1.2).

In the past few years, research has continued on IT's productivity impact. Attribution of economic productivity gains to IT is not without some controversy. Recent work has attempted to evaluate productivity improvements at a more detailed level than economy or industry sector. While the macrolevel numbers seem to support IT as a driver of productivity increases, research at the firm level and further examination of the overall data have been somewhat

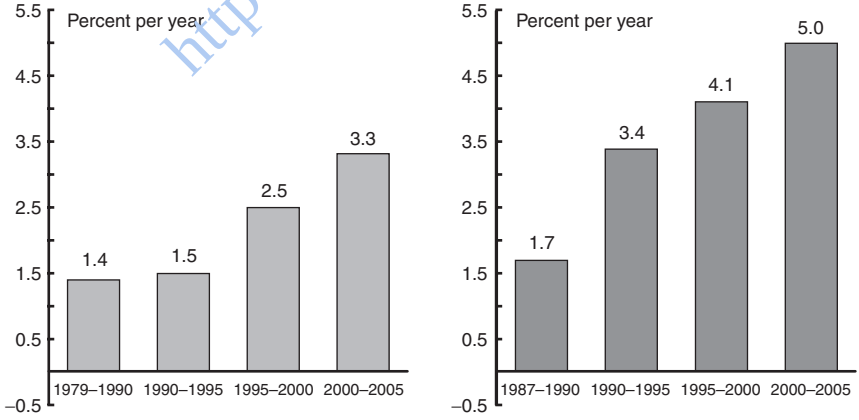

Exhibit 1.2 U.S. Productivity Improvement Statistics (*Source:* U.S. Bureau of Labor Statistics, http://www.bls.gov/cps/labor2005/chart1-18.pdf.)

less conclusive. Martin Bailey, senior fellow at the Institute for International Economics and senior advisor to McKinsey & Company, in a late-2003 retrospective on 1990s IT spending said "to a degree, it may have been the economic boom that created the big wave of IT investment rather than the wave of IT investment that created the boom." He also encourages caution linking IT investment to the 1995 turnaround because "the growth accounting framework did not do very well in tracking productivity movements prior to 1995."[18]

Earlier, Paul Strassmann, former CIO of Xerox and a leading IT effectiveness researcher and consultant, took an even tougher stance, observing of productivity statistics that "corporate management cannot make practical use of this data. It is by the economists, for the economists and is of use only for engaging in unresolvable disputes." Strassmann advocates the more detailed research that has followed saying that "only measures that can be explicitly related to corporate financial performance can settle the arguments whether the U.S. is either losing or gaining on productivity growth in the private sector."[19]

The large body of research attempting to further clarify the issue by examining more granular data is best summarized by Bailey in another 2003 report that concluded that "counting both the productivity growth within IT-producing industries and the productivity growth enabled by IT in using industries, IT did contribute to productivity growth in the 1990s and to the acceleration."[20]

The amount of the productivity improvements in the U.S. economy due to IT spending is still a matter of debate. However, researchers, academics, and economists all appear to agree on two points: First, that U.S. labor productivity started improving in 1995, and that improvement has accelerated since 2000. Second, certainly some, if not most, of the improvements are the result of the creation, deployment, and effective use of IT in organizations.

We do not have to rely merely on academia, economists, or on abstract concepts such as productivity gains in the U.S. economy for confirmation that IT investments produce results for corporations. According to the World Information Technology and Services Alliance (WITSA), "Global reliance on [technology] is growing . . . and [Information and Communications Technology] has become the indispensable technology for social and economic growth in developed and developing countries alike." The WITSA analysis found that global spending on information and communications technology grew by $1 trillion between 2001 and 2006, topping $3 trillion in 2006. They project spending to reach $4 trillion by 2009.[21] Clearly, business decision makers are voting with their budgets on the value of technology.

The quantitative, specific results that companies who invest in information technology have enjoyed are easy to identify.

Significantly improved sales forecasting, rapid month-end closings, shortened supply chains, tightened inventories, streamlined customer communication, and better information for business decision making are just a few of the results of the combination of hardware, software, and effort expended over the past 25 years, for example:

- General Electric (GE), through a systems-based push to monitor all of its business activities more effectively, has created capabilities and reporting systems that allow it to respond quickly to events. Business managers have real-time dashboards or "digital cockpits" that highlight important aspects of their operation—sales results, inventory levels, and order status. Overall, systems implementations have helped GE achieve impressive savings numbers: $100 million from inventory, accounts payable and receivables, $680 million saved in procurement through on-line auction purchasing. GE estimates total savings as a result of "digitization" at a staggering $1.6 billion.[22]
- Weirton Steel, a $1.3 billion steel manufacturer, has lowered labor hours per ton of steel from 6.5 hours to 1.3; the CEO attributes the cost improvements directly to the deployment of technology.[23]
- Roadway Express, a $2.8 billion freight hauler, implemented systems that provided detailed tracking for all internal operations. This allowed the systems to track the true cost-to-serve for all processes using Activity Based Costing (ABC). The system not only helped them identify process improvement and cost reduction opportunities, but also understand the true cost of serving customers, allowing them to turn away unprofitable business. Based on these IT initiatives, the company was able to improve their operating yields, with revenue-per-ton up 4 percent in 2001, in an environment where their competitors were struggling to merely maintain existing margins.[24]
- United Health Group, an $18-billion insurer, used technology-driven reengineering to produce large productivity gains and reduce overhead costs by more than $300,000 annually.[25]
- KIAH, a financial services firm, reduced its mortgage approval process from four days to 10 minutes, all based on technology deployment.[26]
- Tsutaya, Japan's largest CD and video retailer used a combination of customer relationship management systems, data warehousing, and wireless technology to begin offering new services to customers through their subsidiary, Tsutaya On Line (TOL). By taking advantage of the large number of wireless phone subscribers in Japan, TOL achieved a subscriber base of over 2.5 million in a few short years. TOL builds an assessment of subscribers personal entertainment preferences and provides content to their wireless phones, including music clips, movie reviews, and film recommendations. TOL customers who use the mobile service spend 9 percent more with Tsutaya than non-TOL customers. Based on their sophisticated delivery of personalized content, TOL has grown profits by more than 48 percent, in a challenged Japanese economy.[27]
- CSX, an $8 billion rail and intermodel transportation company, implemented a "black box" system for trains that records operational

information. The wirelessly downloaded data provided information on engineers' performance to their supervisors for evaluation. Supervisors in turn were able to provide helpful feedback. The resulting improvement in engineer driving is projected to save $6.8 million in fuel costs annually. These savings are only likely to increase as fuel costs rise.[28]

- Dell computer, a $50 billion computer hardware company, used a combination of Oracle software and Linux systems to replace and enhance its existing order processing capability. The result was a doubling of Dell's order handling ability with estimated annual benefits of over $18 million.[29]
- Baptist Health South Florida, a nonprofit hospital, implemented a system that monitors patients and provides information regarding patient condition to health care workers. The system reduced Intensive-Care-Unit stay duration by 20 percent, and most importantly reduced mortality rates by 25 percent.[30]
- Atmos Energy, a $5 billion natural gas provider to residential and commercial users, implemented Oracle technology to improve asset management. The resulting productivity gains reduced manual data management by over 100,000 hours as well as improved worker deployment.[31]

For dozens of additional positive anecdotes, look at the "Top 100" awards from *CIO* magazine, given annually to innovators who improve their organizations through the use of the technology. Commercial enterprises from every industry—nonprofits, state, and federal government agencies alike—are enjoying the improved productivity that accompanies effective technology use.

The benefits of IT-enabled innovation don't stop at the office. New technologies for mobile computing, wireless networking, Internet search engines, and even entertainment continue to improve peoples lives. BlackBerries, iPods, wireless networks, and high-speed Internet access have all been enabled by continued capital investments in IT infrastructure and capabilities in homes and businesses.

In short, no reasonable person today contemplates a life without corporate systems supporting every business function, from manufacturing, to finance, to sales and customer support, to say nothing of desktop office-automation products such as spreadsheets and word processors and even IT-enabled consumer electronics such as MP3 players and console games.

Corporations have adopted technology to increase productivity, reduce costs, drive revenues, offer new capabilities to customers and suppliers, and improve competitive positioning. Researchers, educators, economists, pundits, and, most importantly, business managers and consumers agree that investments in information technology are not only unavoidable, but, in fact, are undisputedly and universally beneficial. What is immensely perplexing, then, is that studies of business satisfaction with IT and IT initiatives have produced surprisingly negative results.

Information Technology Misery

In spite of the impressive results from business investment in technology, the IT department is the source of tremendous frustration, missed opportunity, and inefficiency in companies. Corporate management is at odds with the IT department more often than not. The revolving door in the top IT management spot at so many companies has led to the only half-joking interpretation by some that the CIO title stands for "Career Is Over." This level of cynicism is not something you generally hear directed at the individuals who have risen to similar levels of responsibility in a corporation in other functions or business units. Something is clearly amiss with IT departments.

A host of evidence backs this position. One important snapshot of the failures of IT is provided by the Standish Group, a technology research group and consultancy, which has performed an exhaustive analysis of the outcomes of more than seven years of corporate IT projects. The researchers at the Standish Group have performed periodic studies on the results of corporate IT initiatives since 1994. In their widely publicized, groundbreaking research, they found that IT initiatives had surprisingly high failure rates. They found that more than one-half (53 percent) of IT projects had overrun their schedules and budgets. Thirty-one percent of IT projects were cancelled. The average time overrun on projects was 222 percent of the original estimate. It is impossible to calculate the opportunity cost of the failed projects.[32]

Incredibly, the initial Standish survey in 1994 found that a scant 16 percent of projects were completed within the original time frames and budget constraints. The group found that the percentage of completion in larger companies was even lower, at 9 percent. Of projects that were completed, only 42 percent delivered the original planned benefits.[33]

A decade later, Standish found the success rate increasing to 29 percent, an improvement but still surprisingly low.[34] The investment stakes for projects and information technology initiatives are high. Standish has estimated that the average cost of a development project for a large company is well over $2 million, and even small companies invest over $400,000.[35] Others confirm a high level of investment in IT. In their long-running annual survey of IT costs in companies, *Information Week* finds that IT budgets run from two to nine percent of revenue, averaging between three and four percent.[36]

Standish is not alone in its findings. Consultants KPMG found that 87 percent of projects surveyed went 50 percent over their budget. They also found that 45 percent of projects failed to produce the expected benefits and that nearly 90 percent went over schedule.[37] A 2001 Gartner Group survey found that that approximately 40 percent of IT projects do not produce their intended results. They further found that a cancelled IT project lasted about half the time originally intended, and cost companies an average of at least

$1 million per year. Gartner showed that 10 percent of a typical company IT team worked on efforts that had no business benefit.[38]

A 2001 survey by Robbins-Gioia of over 230 firms found that over a third of them were implementing an enterprise system. Fifty-one percent of those companies viewed the ERP system as unsuccessful. Nearly 50 percent said their organization understood how to use the system to improve the business.[39] A similar survey by the Conference Board found that only 34 percent of companies implementing ERP systems were "very satisfied." The survey also showed implementation costs were 25 percent over budget, support costs were 20 percent higher than expected, and 40 percent failed to achieve their anticipated business benefits within a year of launch.[40]

A survey presented at the Joint Aerospace Weapons Systems (JAWS) symposium found that 75 percent of the software budget spent by the U.S. Department of Defense was for systems that were never used or cancelled before completion—a price tag of nearly $27 billion. Worse, the JAWS work found that a paltry 2 percent of projects were successful upon launch.[41] The government is not alone is this. Gartner Group estimates that IT project failures in companies accounted for $75 billion in losses, attributing 60 percent of the failures to poor project management.[42]

If statistics and research results aren't proof enough, observers need look no further than some of the high-profile IT failures of the past few years. A review of a few of these provides ample empirical evidence of how difficult IT projects can be and the tremendous amount of damage they can cause when they go awry:

- *Denver International Airport:* A new state-of-the-art automated baggage handling system was approved to improve baggage management speed, accuracy, and throughput. The sophisticated system was to be controlled by more than 300 computers and be composed of more than 4,000 unmanned baggage cars running over 21 miles of track. Difficulties with the project, which required an investment of more than $230 million, delayed the opening of the airport by 11 months. The delayed opening of the airport cost the city more than $1 million per day while system shortcomings were corrected, with a net result of costs higher than the original investment in the project over the course of the delay. Ultimately, the airport installed a $51 million conventional baggage handling belt system so that the airport could open for business.[43] Much of the new system was later sold for scrap.[44]
- *Hershey Foods:* Three up-to-date programs designed to increase productivity, cut costs, enhance customer-relations management, and improve logistics were arranged to replace Hershey's legacy system simultaneously. Despite that, glitches during peak buying season resulted in sales decreases of 12.4 percent, yielding a dismal third-quarter report.[45]
- *Nike:* New software was implemented to manage Nike's supply chain production line. However, the software failed to adequately match sup-

ply with consumer demand, resulting in shortages in some product lines and overproduction in others. Nike blamed its $100 million quarter-to-quarter revenue drop on i2 Technology's software, a part of a larger software project, which ultimately cost Nike more than $400 million.[46]

- *Washington State Department of Licensing:* A new program was implemented to provide a fully automated system for vehicle registration and renewal. The program was expected to cost $41.8 million and take five years to execute. However, difficulties after only three years increased the cost to more than $51 million. The project was terminated seven years after its initiation. Consequently, $40 million had been wasted because of bad management and poor guidelines.[47]
- *Mississippi Department of Information Technology Services (ITS):* The original $11 million contract called for a consulting firm to build an automated tax system to collect 36 taxes for the state's tax commission during a 40-month period. However, "not a single tax was implemented during the 64-month term of the contract," according to an ITS statement. Settlement attempts failed, the case made it to trial, and a jury in August 2000 awarded the state of Mississippi $175 million in actual and punitive damages. Post-verdict negotiations between the parties reduced the settlement to $185 million over several years.[48]
- *Cisco Systems:* A modern forecasting system was produced as a major strategic competitive advantage. However, management's trust in the system allowed a large economic turndown to go unnoticed, which, in turn, led to write-offs totaling $2.2 billion, 8,500 layoffs, and a decrease of $68.37 per share in its stock.[49]
- *FoxMeyer Drug:* A top-of-the-line enterprise resource planning (ERP) program, anticipated to cost $65 million, was facilitated to boost the drug distributor's productivity. Release of the software was pushed forward 90 days, sacrificing valuable module test time and eliminating the opportunity to reengineer business processes. Software glitches and inaccurate inventory forecasting resulted in bankruptcy.[50]
- *Tri Valley Growers:* A modern software program was designed to cut costs and improve productivity. The system cost more than $6 million; however, no expectations were met and some of the software could not even be installed. After investing $20 million in the implementation, Tri Valley refused to pay its vendor and stopped using the software. When Tri Valley filed a $20 million lawsuit, its software provider countersued for breach of contract.[51]
- *W. W. Grainger Inc.:* A software system was implemented to optimize profit and cut costs. The system, costing at least $9 million, repeatedly overcounted warehouse inventory, which led to inventory shrinkage. As a result, Grainger experienced $23 million in reduced earnings and a loss of $19 million in sales.[52]

- U.K. food retailer J Sainsbury wrote off a $526 million supply chain system that failed to deliver merchandise properly from the companies warehouses to its stores. The company ultimately hired 3,000 temporary workers to get items on their shelves.[53]

In late 2005, the IEEE published its software "hall of shame" highlighting some of the major systems implementation failures of the previous dozen years (Exhibit 1.3). Total costs for failed projects were over $5 billion in just these incidents alone, not to mention billions more in damages, lost revenue, or other costs highlighted by the survey.[54]

These high-profile IT project failures are simply those highlighted in the technology press. The Standish Group statistics imply that such anecdotes are the rule, not the exception.

Dissatisfaction with the IT department, however, extends beyond these high-profile project flameouts. There is also well-documented dissatisfaction with all levels of corporate IT departments, from help desk support, to operations, to management. Marcy Lacity and Rudy Hirschheim documented this in their research for *Information Systems Outsourcing: Myths, Metaphors, and Realities,* finding that "only 2 of the 13 companies that participated in the study agree that their IT departments are critical to corporate success. The remaining 11 companies all see their IT departments as a necessary, but burdensome, cost pit."[55]

The proverbial surly, supercilious, and contemptuous "tech guy" from the IT department has become such a common corporate stereotype that *Saturday Night Live* immortalized the character in the form of "Nick Burns: Your Company's Computer Guy."

The character of Nick certainly goes over the top, with comments such as "They teach this kind of stuff on *Blue's Clues*"; "[so] it's the e-mail that's stupid, not you, right?"; "I was trying to help those morons on the third floor. They're trying to run RealPlayer behind a firewall without the proxy set—can you believe that?"; and (responding to his ever-beeping pager) "It's those goofs over in Organizational Development—they make you guys look like brainiacs over there." Much of the effectiveness and humor of the skit comes from the fact that everyone seems to know a Nick Burns in his or her own organization.

The image of technology workers is so negative that even the federal government got into the act. A U.S. Department of Commerce publication concluded, "Many people have a distorted, negative image of IT workers," and recommended remediation in the media of the IT profession image to attract additional workers to the field.[56]

The result is that IT has, in many companies, been relegated to a backwater operation, in spite of its clearly recognized importance to operations and productivity. As a former CIO writing under the pseudonym "Anonymous" writes

YEAR	COMPANY	OUTCOME (COSTS IN US $)
2005	Hudson Bay Co. [Canada]	Problems with inventory system contribute to $33.3 million loss.
2004–2005	U.K. Inland Revenue	Software errors contribute to $3.45 billion tax-credit overpayment.
2004	Avis Europe PLC [United Kingdom]	Enterprise resource planning (ERP) system canceled after $54.5 million† is spent.
2004	Ford Motor Co.	Purchasing system abandoned after deployment costing approximately $400 million.
2004	J Sainsbury PLC [United Kingdom]	Supply-chain management system abandoned after deployment costing $527 million.
2004	Hewlett-Packard Co.	Problems with ERP system contribute to $160 million loss.
2003–2004	AT&T Wireless	Customer relations management (CRM) upgrade problems lead to revenue loss of $100 million.
2002	McDonald's Corp.	The innovative information-purchasing system canceled after $170 million is spent.
2002	Sydney Water Corp. [Australia]	Billing system canceled after $33.2 million is spent.
2002	CIGNA Corp.	Problems with CRM system contribute to $445 million loss.
2001	Nike Inc.	Problems with supply-chain management system contribute to $100 million loss.
2001	Kmart Corp.	Supply-chain management system canceled after $130 million is spent.
2000	Washington, DC	City payroll system abandoned after deployment costing $25 million.
1999	United Way	Administrative processing system canceled after $12 million is spent.
1999	State of Mississippi	Tax system canceled after $11.2 million is spent; state receives $185 million damages.
1999	Hershey Food Corp.	Problems with ERP system contribute to $151 million loss.

(continued)

Exhibit 1.3 IEEE Project Failure "Hall of Shame" (*Source: IEEE Spectrum,* September 2005, http://www.spectrum.ieee.org/sep05/1685/failt1. © 2006 by IEEE.)

YEAR	COMPANY	OUTCOME (COSTS IN US $)
1998	Snap-on Inc.	Problems with order-entry system contribute to revenue loss of $50. million.
1997	U.S. Internal Revenue Service	Tax modernization effort canceled after $4 billion is spent.
1997	State of Washington	Department of Motor Vehicle (DMV) system canceled after $40 million is spent.
1997	Oxford Health Plans Inc.	Billing and claims system problems to contribute to quarterly loss; stock plummets, leading to $3.4 billion loss in corporate value.
1996	Arianespace [France]	Software specification and design errors cause $350 million Ariane 5 rocket to explode.
1996	FoxMeyer Drug Co.	$40 million ERP system abandoned after deployment, forcing company into bankruptcy.
1995	Toronto Stock Exchange [Canada]	Electronic trading system cancelled after $25 million is spent.
1994	U.S. Federal Aviation Administration	Advanced Automation System canceled after $2.6 billion is spent.
1994	State of California	DMV system canceled after $44 million is spent.
1994	Chemical Bank	Software error causes a total of $15 million to be deducted from 100,000 customer accounts.
1993	London Stock Exchange [United Kingdom]	Taurus stock settlement system canceled after $800 million is spent.
1993	Allstate Insurance Co.	Office automation system abandoned after deployment, costing $130 million.
1993	London Ambulance Service [United Kingdom]	Dispatch system canceled in 1990 at $11.25 million; second attempt abandoned after deployment, costing $15 million.
1993	Greyhound Lines Inc.	Bus reservation system crashes repeatedly upon introduction, contributing to revenue loss of $61 million.
1992	Budget Rent-A-Car, Hilton Hotels, Marriott International, and AMR [American Airlines]	Travel reservation system canceled after $165 million is spent.

Exhibit 1.3 *Continued*

in *CIO* magazine, "As far as most people at your company are concerned, [the] IT staff operates . . . somewhere apart from the 'real' company."[57]

In their article, "IT's Rodney Dangerfield Complex," *CIO* magazine highlighted the result of business frustration with IT, quoting a CIO from a major corporation: "[IT] gets no respect [from the other departments]." The article goes on to say that IT was "left out of business process or technology-related discussions" and that the department "was fragmented and the organization lacked consistency in project management, processes, and production."[58]

The Standish Group goes one step further, saying that in the computer industry, "failures are covered up, ignored and/or rationalized."[59] The unfortunate reality is that the "Rodney Dangerfield complex" describes the position of the IT department in all too many organizations.

A Burning Platform

For more than a decade, *Information Week* has conducted a survey on IT spending in top U.S. corporations. The results are telling. Most U.S. companies spend between 2 percent and 9 percent of their annual revenues on IT-related expenditures. The rate varies by industry, but median spending is somewhere between 4 percent and 5 percent.[60] Exhibit 1.4 outlines the average spending by industry, as a percentage of corporate revenue. Although the benchmark IT spending as a percentage of revenue varies from industry to industry, the majority of industries spend between 2 percent and 5 percent of revenues on technology.

Exhibit 1.5 shows the trend in the *Information Week* data over the past few years. The average spent on technology by companies has risen steadily, in spite of the well-known pullback in 2001.[61]

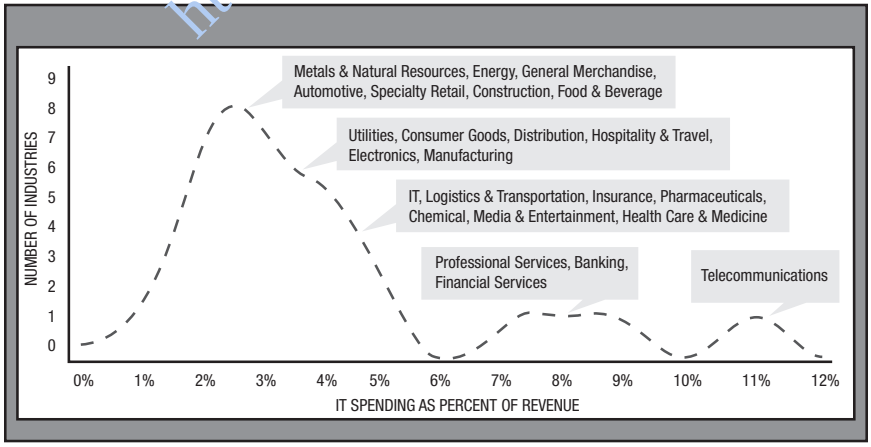

Exhibit 1.4 IT Spending as a Percent of Revenue by Aggregate Industry Group

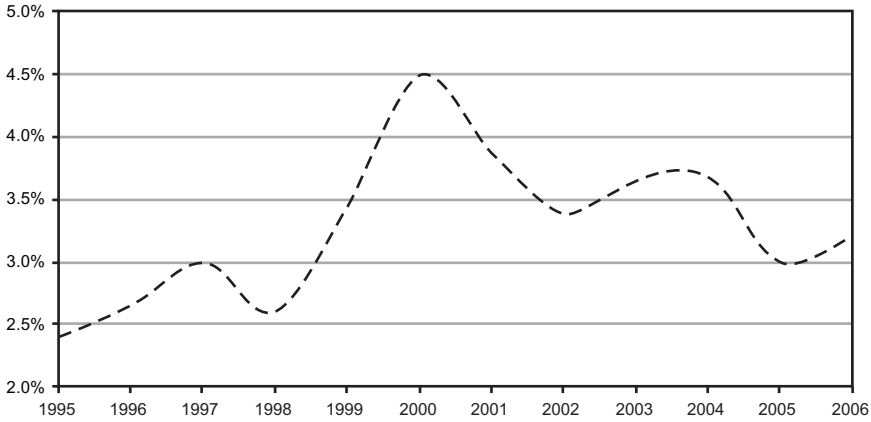

Exhibit 1.5 IT Spending in *Information Week* 500 Companies (1995–2006)
(*Source: Information Week,* http://www.informationweek.com/iw500.)

The problems outlined in the previous section should be of material interest to corporations. The amount of spending and investment by corporations, even those investing in IT at the low end of the scale, means that the problems in IT have to be addressed. At 4 percent to 5 percent of revenues, the IT costs in a company must be managed effectively. At this average range, IT costs are usually one of the largest nondirect expenditures in a company. In comparison, according to studies performed by the Hackett Group, world-class companies on average spend only 0.67 percent of revenues on finance.[62] Both the benefits to be achieved, and the high investment required by IT justify close attention from senior management to ensure that IT is effective and producing the right results.

Information Technology Satisfaction?

One useful way of rating corporations' effective use of IT is to plot their level of overall satisfaction with IT—the sum of customer service levels, cost reductions, improved business operations, or other relevant aggregate measures of benefits produced by the IT department. Exhibit 1.6 compares this satisfaction with the level of cost relative to peer companies.

Companies with limited IT operations begin in the southwest quadrant. While their satisfaction with IT is low, it is not surprising given their low level of investment. To improve IT operations and achieve the benefits outlined in this chapter, the company begins investing in technology. This migrates them northward on the matrix. The senior management team generally has the intention of finding a way to migrate to the southeast corner where IT costs are kept at reasonable levels expected for the company, and higher satisfaction is achieved.

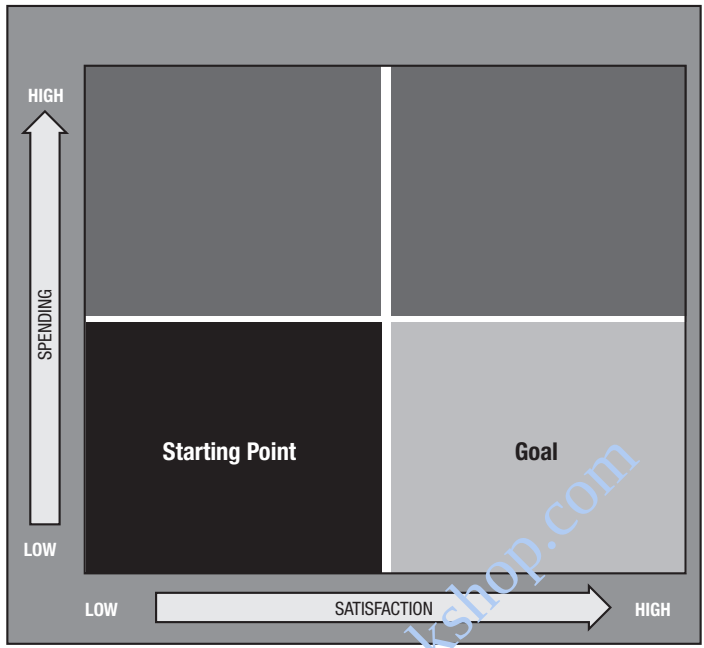

Exhibit 1.6 IT Satisfaction versus IT Spending

In many companies, the increased investments in IT do not produce the expected benefits. Satisfaction stagnates, or even diminishes, based on the high expectations set from the incremental investment. Often, at best, companies achieve large improvements in their level of satisfaction, but the baseline steady state of IT investment never levels off, or it goes back to previous levels. As Exhibit 1.7 demonstrates, the fate of many companies is at best a permanent residence in the northeast quadrant and, at worst, the northwest "high-spending, low-satisfaction" corner.

This combination of IT dissatisfaction and high spending has created a burning platform for the improvement of the IT department.

The Information Technology Dilemma

Why, then, if IT is an absolute requirement in any company today, is corporate senior management's satisfaction with such a critical function so startlingly low? Why is the actual and perceived satisfaction of the end customer so low? Why is the IT department's satisfaction with consultants, applications providers, and hardware vendors similarly low? How can IT shake the "Nick Burns" stereotype and thrive as an integral, vital function in a company?

Why do companies spend as much as 9 percent of their annual revenues on a function that didn't exist 40 years ago and, while achieving incredible

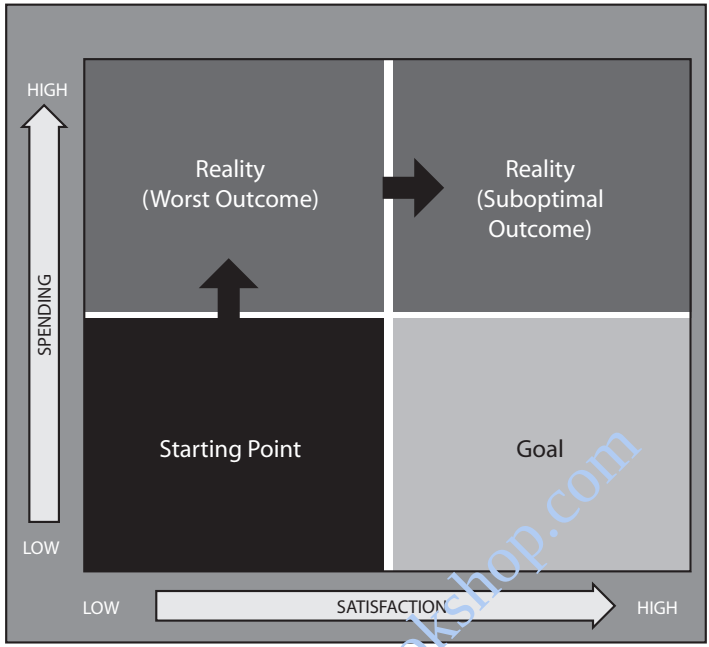

Exhibit 1.7 Typical Company Progression

benefits, still so often fail to derive full value or satisfaction from their investment?

These are intriguing questions, and, more importantly, ones that senior management teams ignore at their peril. Many companies appear to be caught in a perplexing dilemma. They must invest in information technology, if not for productivity gain, at least for competitive parity. Technology investments have created major productivity gains over the past two decades.

Research and anecdotal evidence, however, also make it clear that the failures of IT departments to produce cost-effective, satisfactory results have produced misery on a massive scale for corporations and IT department personnel alike.

Every company spending money on an IT department has no choice but to grapple with these issues. Many organizations continue to throw money at the problem, escalating the issue even further. Ignoring the issues, or treating them with superficial infusions of additional investment, does not change the underlying problems. In fact, it is the primary reason companies find themselves in the northwest corner of the IT spending and satisfaction matrix.

Chapter 2 outlines some of the symptoms and causes of the IT dilemma. The remainder of this book presents the building blocks of effective IT management that we have used to help many of our clients move to the southeast corner of the matrix.

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