CHAPTER 1
The CIO Dilemma

The role of the chief information officer (CIO) continues to be a challenge in many organizations. Unlike the CIO's related "C-suite" colleagues, organizations struggle to understand the need for the role and more importantly how to measure success. We know that most CIOs have short terms, the vast number only lasting about three years. At CIO conferences, many CIOs have coined the CIO acronym as standing for "Career Is Over." Nothing should be further from the truth. We know that technology continues to be the most important factor in strategic advantage among chief executive officers (CEOs). And we also know that there is a population of CIOs that have clearly demonstrated the success of the role by the sheer longevity that they have held their position. We will cover some cases of these individuals later in the book. This chapter focuses on the common dilemmas that face CIOs based on our research and practice.

The isolation of information technology (IT) as a department is nothing new. Technology people have been criticized, and in many cases rightfully so, for their inability to integrate with the rest of the organization.[1] Being stereotyped as "techies" continues to be relevant, and the image seems to have gravitated to the level of the CIO. Even with the widespread importance of IT over the past two decades, CIOs have been challenged to bring strategic value to their companies—and those that have not done so have had short-lived tenures. There is little question about the frustration that exists with CIOs at the CEO level, the reasons for which we will address in this book. Satisfying the CEO is a challenge for most CIOs—it involves the complexity of explaining why IT is so expensive, understanding why projects take so long to complete, and clearly articulating how IT supports the business. Our best evidence of this communication gap between the CEO and CIO was best represented by Carr's 2003 article titled, "IT Doesn't Matter," which was published in the *Harvard Business Review*.[2] The article sharply criticized the IT function and attacked its overall value to organizations. It received instant popularity among chief financial officers (CFOs) and CEOs as many began to review their investments in IT and the role of the CIO in general. The question remains, *why*? Especially since so many CEOs acknowledge that IT is the most important variable of competitive advantage.

Because technology is changing at such a rapid pace, the ability for any CIO to operate in a dynamic business environment is staggering. As we will see in this book, the CIO fights a "two-front war": Keeping technology operational and secure while at the same time attempting to bring strategic advantage for the business. This is certainly not an easy task, as Schein discussed in his 1992 article, "Management and Information Technology: Two Subcultures in Collision." The article disclosed much of the imbalance between the CEO and IT. This "imbalance" has continued to be the key success factor for many CIOs, especially when they attempt to bring strategic value to their organizations.

The results of our research suggest that the CIO's value to the business lies in the following key areas:

- Business integration
- Security
- Data analytics
- Legal exposure
- Cost containment

Business Integration

There is nothing new about the mission for CIOs to figure out how to integrate technology in their respective businesses. The consensus among successful CIOs is that they spend a significant amount of their time meeting and working with key business owners, particularly business heads. However, Langer's research found that line managers were even more important.[3] Line managers are defined as those managers that have ultimate day-to-day responsibility for a business area, so successful CIOs ensure that they are in touch at that level as well. Spending time is one thing; however, accomplishing true integration requires CIOs to commit staff to those line units and even consider permanently moving IT resources to business units. The results of our research show that many CIOs say they are integrated, yet few really are. The key aspect of CIO business integration is relationship building. True relationships mean spending consistent time and becoming part of the challenges of the business unit.

Security

In the past 10 years, security of information has become of top concern for many organizations because of the growth of the Internet, social media, and widespread online accessibility in general. Depending on the industry, protecting data and information are paramount to the lifeblood in such

industries as finance, health care, and government. A breach of security can quickly create a loss of client confidence and even result in penalties imposed by various regulatory bodies. So explaining how the CIO and a CISO (Chief Information Security Officer) are protecting the business's information is a very important topic at board meetings.

Data Analytics

"Data analytics," the current term used for understanding the data that the organization owns, has been the most growing area of interest for CIOs because of board-level interests. Knowledge is power, as they say, and being able to aggregate data for competitive advantage is critical for any organization. Data analytics requires CIOs to first be able to figure out the technical challenges of aggregating the data, then being capable enough to learn how best to present what the data mean. The more board members see meaningful data, the more questions they have, which ultimately leads to an ongoing inquiry of questions and responses. The interaction, if done effectively, promotes the importance that the CIO has to the business.

Legal Exposure

IT has many legal exposures; the data they save, the intellectual property they own, and the complexity of contractual relationship they have cause much exposure for any firm. CIOs need to understand how to operate with their organization's corporate counsel and be heavily versed on the international legal terrain. Furthermore, there are growing legal exposures that relate to the information that firms keep, which can be used as part of discovery during legal cases. In addition are the complexities of protecting intellectual property, patents, trademarks, and copyrights, and in many industries such as health care, the overabundance of regulation on protecting and using data. The responsibility for much of all of these issues falls on the CIO.

Cost Containment

Let's not underestimate the value that IT has in reducing certain operational costs. Providing IT shared services is still a significant value proposition to many boards. Squeezing costs to improve shareholder value is another avenue of IT value. Many CIOs can obtain board confidence by showing ways to cut existing costs. There are dangers in trying to do this, particularly with the business units that may be affected, so CIOs need to be very careful how they

embark on cost-reduction initiatives. Having a cost-efficient mindset is also impressive to boards, as CIOs historically have been classified as "spenders" and they still represent a very large part of a firm's overall capital expenditures.

When looking at these issues, it seems overwhelming that one individual could ultimately be responsible for all of these functions. Yet while there are other executives involved (e.g., legal counsel), the CIO must be involved in setting the strategy and operational controls that protect the organization and make it competitive at the same time. It seems like the CIO has a two-front war, as we shall discuss in later chapters.

A major IT dilemma is how to design an enterprise IT organization that addresses the factors just discussed. What does this mean? The question really is whether user and consumer expectations toward IT innovations result in significant changes in how technology is delivered and managed within an organization. This question is being raised during a time where there:

- Are disruptions of traditional models being challenged by the market.
- Is greater opportunity for innovation in a global context.
- Is a much more demanding employee base.
- Is a need to accelerate the speed of change.
- Are third-party infrastructures for consideration.

So, the need for IT leadership has never been greater, during a period where there is a shortage of CIO talent!

As Chris Scalet, former CIO of Merck, once stated at Columbia University, "CEO demands from IT are dramatically increasing":

- They want it all—productivity, speed, predictability, cost effectiveness, and innovation.
- Technology as an accelerator and differentiator rather than a speed bump or "gating factor."
- Generation of revenue.
- Market leadership.
- Relevance.
- Tight alignment with the business.

So the CIO now has to rethink IT services to meet these demands. We are at that "fork in the road."

Some History

Much of the CIO leadership, simply by their age, likely began their careers during a different phase of the IT evolution. During the 1970s, the mainframe was king. IT was locked down and was mostly used for accounting and number

crunching. By the 1980s, the personal computer (PC) hit the market and for the first time IT could no longer control technology solely inside the walls of the IT department. Unfortunately, IT executives tended to reject the PC as a viable IT solution, coining it more as a toy than a real business solution. However, by the 1990s, distributed computing became a reality, especially with the proliferation of networked PCs—which allowed for the widespread expansion of IT throughout the business. IT could no longer restrict users from working with computers directly. The advent of PC networks also required that IT leaders become enamored with the need to support the end user—those CIOs that provided the best support were the best CIOs. Unfortunately, support in the 1990s meant quick response to user requests within limits that restricted access to certain computers, software, and operating systems. By 2000, the Internet revolution was upon us, the dot-coms had crumbled, but the user also became a consumer, and consumers rule the business. So in the 40-year evolution, IT leaders have needed to make significant shifts in the way they deliver and manage IT services—with an evolution toward "consumerization." Unfortunately, many of those "older" IT executives have found it difficult to adjust and change, which has resulted in a common turnover of CIOs usually in the three-year range. The typical reason is that CIOs formulate a strategy in their first year, implement in their second, and fail to deliver in their third and final year! Not an impressive story, for sure. The dilemma then also relates to past experiences with CIOs that attempt to either ignore or block past IT evolutions.

The consumerization of technology is staggering. Ninety-five percent of employee purchases of technology are used for business. A Unisys study of 2,820 employees reflected that workers are generally dissatisfied with the level of support IT provides for its consumer technologies. While 95% of technologies are self-purchased by employees, 70% of their employers want to standardize technologies for them, thus restricting their abilities to use the technologies they have purchased. Furthermore, 57% of those employers are not interested in providing stipends for employee expenditures.

The Challenge

Today, we see another level of IT evolution that specifically involves cloud computing, mobility, predictive analysis, cyber security, and social media—all affecting how CIOs deal with the legal complexities, business integration, and security challenges mentioned earlier. Cloud computing has established an entirely new service model that allows businesses to gain access to outside networks that store data and provide common software solutions at lower and more effective prices. This mobility requires IT executives to provide employees with the capacity to work wherever they are, without necessarily requiring

them to use a laptop or desktop computer. Predictive analysis, a subset of data analytics, provides the ability of users to access reliable data and understand past transactions to effectively predict what will happen in the future. Finally, social media must optimize communication between companies and their customers and suppliers.

Oxford Economics recently surveyed C-suite executives and asked them to rate the impact of each of these areas on their businesses over the next five years. Almost 60% selected mobile technology, and over 35% selected predictive analysis and cloud computing, with slightly over 30% picking social media.

This leads to two important questions: (1) How will this new wave of "disruptive" technologies affect organizations, and (2) can CIOs establish a natural evolution in their organizations that will lead to a fundamental shift in the way IT is managed and measured?

The New Paradigm

Prahalad and Krishnan realized the effects of consumerization on IT in their book *The New Age of Innovation*. They established a model called the "New House of Innovation."[4]

At the core of this model is the proposition that there is a need for "flexible and resilient business processes and focused analytics."[5] The "pillars" of this need are represented by N = 1 and R = G. N = 1 is the consumer: Every business must serve each consumer as a unique individual. R = G, however, suggests that resources must be global. So the model essentially frames consumerization as being the ability to serve one customer's needs by using multiple resources from global sources. In other words, to successfully compete, organizations must be agile enough to provide specialized services; the only way to accomplish this is through a multitude of providers that can respond and deliver. For example, if a user needs service at an off-peak time, the organization that can provide such support using global resources will be the winning businesses of the future. A consumer needing something at midnight in New York perhaps will be serviced by someone in Singapore—it's "on-demand," specialized for the individual. An alternative analogy is the Burger King slogan: "Have it your way." The difference here is that consumers want it on demand. So Burger King would have to provide hamburgers at midnight and provide almost unlimited choices. Not an easy world, but the reality of what technology has created in the *new* world. So the message for the contemporary CIO is to treat every user as a unique entity and have dynamic resources that can deliver what they want and when they want it. To accomplish this feat, CIOs need multitudes of strategic alliances and new types of employees.

Consumerization of Technology: The Next Paradigm Shift

We continue to expand this idea of the paradigm shift expressed thus far. The need for new forces in organizations can be represented by four fundamental shifts in IT service requirements now also known as the key aspects of digital transformation:

1. Speed must be more important than cost.
2. The workforce must be empowered to respond to consumer and market needs.
3. Choice of devices over standardization and controls.
4. On-demand infrastructure (networks, computing power, and storage).

Much of these four shifts will serve to further the commoditization of many traditional IT roles and responsibilities. This will place greater emphasis on the ability of the CIO to lead. Thus, there must be emerging shifts in the way IT is used, led by the CIO, to construct this new consumerization:

- Information is more important than the technology used to deliver it.
- IT must be embedded in the business more significantly and in a much different way.
- Service deliveries must use internal and external resources through strategic alliances and partnerships.
- Knowledge within IT must be mapped into actual business responsibilities.
- The traditional role of IT must be openly diminished.

So the CIO dilemma ultimately is to figure out how to lead this transformation. The impact on the IT organization will be significant in five ways:

1. IT must completely overhaul its value services, transitioning them to areas like business intelligence to improve collaborations with users and customers.
2. Back-office operations will continue to be commoditized and outsourced where appropriate.
3. Business units will become increasingly capable of obtaining IT services directly from third-party service providers.
4. Business leaders must learn how to develop and drive their own technology strategies and seek leadership from the CIO.
5. Traditional IT roles such as project management and change management must be transitioned into more business-defined services.

The End of Planning

Accenture issued a report in February 2012 from its Institute for High Performance. The report, "Reimagining Enterprise IT for an Uncertain Future," discusses the complexity of being an IT executive, emphasizing the "uncertainty" of the future. More important was Accenture's finding that there are seven "'large-scale forces" that can make or break IT organizations:

1. The culture impact of consumer IT: Smartphones, social networks, and other consumer technologies are creating the need to change cultures, attitudes, and workplace practices.
2. Global, Internet-based competition: Companies with Internet-based models are challenging and overtaking traditional industry leaders from North America, Europe, and Japan.
3. Vulnerable technology and information—particularly security and reliability.
4. Increasing pressure for quality and efficiency—while keeping costs low.
5. Rise of data-driven decision making for critical systems.
6. New approaches to innovation—rethinking how to provide and control new products and services.
7. Disruptive disasters caused by man-made catastrophes and wars.

The report also states, "Executives are paid to anticipate what might go wrong and what might be different tomorrow than it is today." Ultimately, this means that CIOs cannot operate based on long-term plans because its assumptions are likely to be highly vulnerable to realities. As we will discuss later in the book, CIOs need to "sense" opportunity and "respond" in a dynamic fashion. This represents a huge leap in their thinking and doing.

The world of the CIO has changed. Some may view this change as the end of the role—others will see this transition as an opportunity to transform their organizations, evolve the culture, and build technology-based businesses with an emphasis on the following core concepts:

- Employees and consumers will demand special technologies and services, which will alter the "control" mindset of many IT organizations over their constituents.
- Historical CIO responses to change will not work this time—avoiding or ignoring the need to change will not be sufficient for the CIO to survive.

- CIOs must surround themselves with technology-proficient staffs who can handle the complexities of new IT innovations, which will continue to occur at an accelerated pace.

The CIO in the Organizational Context

Understanding the changes confronting CIOs is significant. But we must also address how these changes will affect the organization. The evolution of IT will change workplace operations dramatically and will continue to increase its relevance among all components of any business, including operations, accounting, and marketing.[6] Given this increasing relevance, the CIO needs to provide significance in relation to:

- The impact it bears on organizational structure.
- The role it can assume in business strategy and competitive advantage.
- The ways in which it can be evaluated.
- The ways of integrating IT with business-line leaders (non-IT executives).

The CIO and Organizational Structure

Sampler's original research explored the relationship between IT and organizational structure.[7] His study, at that time, indicated that there is no clear-cut relationship that has been established between the two. However, his conclusions were that there are five principal positions that IT can take in this relationship:

1. IT can lead to centralization of organizational control.
2. Conversely, IT can lead to decentralization of organizational control.
3. IT can bear no impact on organizational control, its significance being based on other factors.
4. Organizations and IT can interact in an unpredictable manner.
5. IT can enable new organizational arrangements, such as networked or virtual organizations.

According to Sampler, the pursuit of explanatory models for the relationship between IT and organizational structure is a challenge, especially since IT plays dual roles. It enhances and constrains the capabilities of workers within the organization, and because of this, it possesses the ability to create a

unique cultural component. While both roles are active, their impact on the organization cannot be predicted; instead, they evolve as unique social norms within the organization. Because IT is changing so dramatically, it continues to be difficult to compare prior research on the relationship between IT and organizational structure. However, with the effect of consumerization, the five principles need to be readdressed as follows:

1. The centralization of IT over the organization will likely not occur, since it is important that IT be integrated into the business. Only commodity-related services like e-mail will be controlled through central services or outsourcing. We will categorize these functions as "supporter" IT functions in Chapter 2.
2. Because of the integration factors, decentralization can lead to tremendous inefficiencies and divergent efforts; rather, IT will become more "distributed."
3. As automation and technology in general increase in multiple facets of business, it will become more of a factor in organizational control. This will relate to security issues and control of data dissemination within and outside the organization.
4. Organizational interaction will need to become more formal, although it will continue to be unpredictable—that is, without planning due to consumerization.
5. IT will continue to enable new organizational arrangements, such as networked or virtual organizations.

Earl originally studied the effects of applying business process reengineering (BPR) to organizations.[8] BPR is a process that organizations undertake to determine how best to use technology to improve business performance. BPR is now an old term but was at the forefront of the need for true IT business integration. Earl concluded that BPR was "an unfortunate title: it does not reflect the complex nature of either the distinctive underpinning concept of BPR [i.e., to reevaluate methods and rules of business operations] or the essential practical challenges to make it happen [i.e., the reality of how one goes about doing that]."[9] In Langer's 2001 study of the Ravell Corporation, he found that BPR efforts require buy-in from business-line managers and that that such efforts inevitably require the adaptation by of individuals of different cultural norms and practices.[10] These reflective studies provided early key insights for where the current challenges are in IT leadership—simply that true integration does not occur by creating new IT positions that work with non-IT employees, but rather a more evolutionary approach to realignment of knowledge and application of technology among all those that exist in the organization. The CIO then becomes the logical leader of this transition.

Schein, as discussed earlier, also pioneered some of the human resource factors of how challenging the transformation of culture could be to traditional organizations.[11] He recognized that IT culture represented a subculture in collision with many others within an organization. He concluded that if organizations were to be successful in using new technologies, especially in a global context, they must cope with ceaseless flows of information to ensure organizational health and effectiveness. His research indicated that CEOs were reluctant to implement new systems of technology unless their organizations felt comfortable with it and were ready to use it. While many CEOs were aware of cost and efficiency implications in using IT, few were aware of the potential impact on organizational structure that could result from "adopting an IT view of their organizations."[12] Such results suggested that CEOs needed to be more active and more cognizant than they have been of potential shifts in organizational structure when adopting IT opportunities. Today, the lack of understanding and management of the CIO by the CEO is clearly part of the problem of integration to support consumerization.

IT's Role in Business Strategy

While many chief executives recognize the importance of IT in the day-to-day operations of the business, their experience with attempting to utilize IT as a *strategic* business tool has been frustrating and has not materially improved since the research completed by Bensaou and Earl.[13] Their research identified five problem areas. They cite:

1. A lack of correspondence between IT investments and business strategy.
2. Inadequate understanding of the payoff from IT investments.
3. The perception of too much "technology for technology's sake."
4. Poor relations between IT specialists and users.
5. The creation of system designs that fail to incorporate users' preferences and work habits.

While McFarlan created a strategic grid designed to assess the impact of IT on operations and strategy, for the most part we have not seen a material usage in many organizations.[14] The grid showed that IT had maximum value when it affects both operations and core business objectives—certainly no surprise. Based on McFarlan's hypothesis, Applegate and colleagues established five key questions about IT that may be used by executives to guide strategic decision making[15]:

1. Can IT be used to reengineer core value activities and change the basis of competition?

2. Can IT change the nature of the relationship and the balance of power between buyers and sellers?
3. Can IT build or reduce barriers to entry?
4. Can IT increase or decrease switching costs?
5. Can IT add value to existing products and services or create new ones?

The research and analysis conducted by McFarlan and Applegate, respectively, suggest that when operational strategy and its results are maximized, IT is given its highest valuation as a tool that can transform the organization; it then receives the maximum focus from senior management and board members. However, Applegate also focused on the risks of using technology. These risks increase when executives have a poor understanding of competitive dynamics, when they fail to understand the long-term implications of a strategic system that they have launched, or when they fail to account for the time, effort, and cost required to ensure user adoption, assimilation, and effective utilization. Applegate's conclusion underscores the need for IT management to educate senior management, so that the latter will understand the appropriate indicators for what can maximize or minimize their investments in technology.

Szulanski and Amin claim that while emerging technologies shrink the window in which any given strategy can be implemented, if the strategy is well thought out, it can remain viable.[16] Mintzberg's research suggested that it would be useful to think of strategy as an art, not a science.[17] This perspective is especially true in situations of uncertainty. The rapidly changing pace of emerging technologies, we know, puts a strain on established approaches to strategy—that is to say that it becomes increasingly difficult to find comfortable implementation of technological strategies in such times of fast-moving environments, requiring sophisticated organizational infrastructure and capabilities.

Ways of Evaluating IT

Firms have been challenged to find a way to best evaluate IT, particularly using traditional return-on-investment (ROI) approaches. Unfortunately, in this regard, many components of IT do not generate direct returns. Cost allocations based on overhead formulas (e.g., costs of IT as a percentage of revenues) are not applicable to most IT spending needs. Lucas establishes nonmonetary methods for evaluating IT.[18] His concept of conversion effectiveness places value on the ability of IT to complete its projects on time and within its budgets—this alone is a sufficient factor for providing ROI, assuming that the project was approved for valid business reasons. He called this overall process for evaluation the "Garbage Can" model. It allows organizations to

present IT needs through a funneling pipeline of conversion effectiveness that filters out poor technology plans and that can determine what projects will render direct and indirect benefits to the organization. Indirect returns, according to Lucas, are those that do not provide directly measurable monetary returns, but which do provide significant value that can be measured by using his IT investment opportunities matrix. Utilizing statistical probabilities of returns, the opportunities matrix provides an effective tool for evaluating the impact of indirect returns. We will revisit these concepts in Chapter 2 when discussing Langer's theory of driver and supporter.[19]

Executive Knowledge and Management of IT

While much literature and research has been produced on how IT needs to participate in and bring value to an organization, there has been relatively little analysis conducted on what non-IT chief executives need to know about technology. Applegate and colleagues suggest that non-IT executives need to understand how to differentiate new technologies from older ones and how to gauge the expected impact of these technologies on the businesses in which the firm competes for market share.[20] This is to say that technology can change the relationship between customer and vendor and thus should be examined as a potential for providing competitive advantage. The authors state that non-IT business executives must become more comfortable with technology by actively participating in technology decisions rather than delegating them to others. They need to question experts as they would in the financial areas of their businesses. Lou Gerstner, former CEO of IBM, is a good example of a non-IT chief executive who acquired a sufficient knowledge and understanding of a technology firm; he was then able to form a team of executives who better understood how to develop the firm's products, services, and overall business strategy. This research could not have been more accurate, and the need for methods of evaluating technology maturity in non-IT executives and managers will be presented.

Allen and Percival also investigate the importance of non-IT executive knowledge and participation with IT: "If the firm lacks the necessary vision, insights, skills, or core competencies, it may be unwise to invest in the hottest [IT] growth market."[21] The authors point out that success in using emerging technologies is very different from success in other traditional areas of business. They conclude that non-IT managers need to carefully consider expected synergies to determine whether an IT investment can be realized and, especially, whether it is efficient to earn cost of capital.

Recent and historical studies have focused on four important components in the linking of technology and business: (1) Its relationship to organizational structure, (2) its role in business strategy, (3) the means of its evaluation, and (4)

the extent of non-IT executive knowledge in technology. The challenge in determining the best organizational structure for IT is posed by the accelerating technological advances of the past four decades, and by the difficulty in comparing organizational models to consistent business cases. Consequently, there is no single organizational structure that has been adopted by businesses—and it appears that success of IT systems for strategic uses is more dependent on leadership skills than on structure. This belief is the basis of this book, that is, that leadership, especially using methods of strategic advocacy, is more directly connected with CIO success. Indeed, it is well documented that product and service realizations in industry depend more on combinations of the people associated with the project than of its structure.

While most chief executives understand the importance of using technology as part of their business strategy, they express frustration in determining how to effectively implement a technology-based strategic approach. This frustration results from difficulties in understanding how IT investments relate to other strategic business issues, from difficulty in assessing payoff and performance of IT, generally, and from perceived poor relations between IT and other departments.

Because most IT projects do not render direct monetary returns, executives find themselves challenged to understand technology investments. They have difficulty measuring value since traditional ROI formulas are not applicable. Thus, executives would do better to focus on valuing technology investments by using methods that can determine payback based on a matrix of indirect returns, which do not always include monetary sources. There is a lack of research on the question of what general knowledge non-IT executives need to have in order to manage effectively the strategic use of technology within their firms. Non-IT chief executives are often not engaged in day-to-day IT activities, and they often delegate dealing with strategic technology issues to other managers. The remainder of this chapter examines the issues raised by the IT dilemma in its various guises especially as they become relevant to, and are confronted from, the top management or chief executive point of view.

IT: A View from the CEO

To investigate further the critical issues facing IT, Langer conducted a study in which he personally interviewed more than 40 chief executives in various industries including finance-investment, publishing, insurance, wholesale/retail, and hotel management. Executives interviewed were either the CEO or president of their corporation. For this interview study, a population of New York–based mid-size corporations was canvassed. Mid-size firms, in this case,

comprise businesses of between 200 and 500 employees. Face-to-face interviews were conducted to allow participants the opportunity to articulate their responses, in contrast to answering printed survey questions; executives were therefore allowed to expand and clarify their responses to questions. The interview discussions focused on three sections: (1) Chief executive perception of the role of IT, (2) management and strategic issues, and (3) measuring IT performance and activities.

The research revealed that the matter of defining a mission for the IT organization remains as unresolved as finding a way to reckon with the potential impact of IT on business strategy. Executives still seem to be at a loss on the question of *how to integrate IT into the workplace*—a human resource as well as strategic issue. There is uncertainty regarding the dependability of the technology information received. Most agree, however, in their need for software development departments to support their developed software, in their need to outsource certain parts of technology, and in their use of outside consultants to help them formulate the future activities of their IT departments.

While the amount of time that executives spend on IT issues varies, there is a positive correlation between a structure in which CIOs report directly to the chief executive and the degree of activity that executives state they have with IT matters. CEOs understand the potential value that technology can bring to the marketing and productivity of their firms. They do not believe, however, that technology can go unmeasured; spending needs some rationale for allotting a figure in the budget. For most of the firms in this study, the use of the Internet as a technological vehicle for future business is not determined by IT. This suggests that IT does not manage the marketing aspects of technology and that it has not achieved significant integration in strategic planning.

The variations found in our research of where IT reports, how it is measured, and how its mission is defined must lie as a core responsibility of the contemporary CIO. But the wide-ranging inconsistencies and uncertainties among CEOs described earlier leave many of them wondering whether or not they should be using information technology as part of their business strategy and operations. While this quandary does not in itself suggest an inadequacy, it does point to an absence of a "best practices" guideline for using technology strategically. Hence, most CIOs have not developed a clear plan on how to evolve IT contributions toward business development. Though a high majority of CEOs feel that IT is critical to the survival of their businesses, the degree of IT assimilation within the core culture of organizations still varies. This suggests that the effects of cultural assimilation lag behind the actual involvement of IT in the strategic direction of the company.

Of course, "best practices" always embodies the implicit notion of best principles, and the problems confronting executives—the need for practical guidelines—remains. For instance, our studies show that IT performance is

measured in many different ways. It is this type of practical inconsistency that leaves chief executives with the difficult challenge of understanding how technology decisions can be managed.

This chapter has addressed the IT dilemma through two fundamental perspectives: The CIO's role and responsibilities to the organization; and the view from the CEO and organization at large. Ultimately, the purpose of this book is to provide practitioners, CEOs, and educators with remedies to the dilemmas that we have presented. Thus, the book is broken down into three components. First, it provides a grounded theory of how these executives position the role of technology within the business, the strategic advocacy practices they use, and how they adapt them. Second, it examines the organizational implications of these strategic relationships in terms of implications for organizational learning and innovation. Third, it looks at the learning process as a device for nurturing these strategies in high-potential technology professionals and managers.

Notes

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