# Educating the Business Information Technologist

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## INTRODUCTION

The ways in which computers have been applied to business have evolved over the past 40 years. In the commonly accepted three-era model of applied computing, the first era focused on automating processes, and the second on providing management information. The current era embraces information technology (IT) as a strategic resource and critical asset of the organization (Jessup & Velacich, 1999; Ward & Griffiths, 1996; and others). IT is a transformation enabler or driver that allows organizations to meet both their short-term and long-term objectives. Under this latter model, organizations expect IT to create new ways to compete, new products, new processes, new marketing channels, and even new organizational forms that promote "better-faster-cheaper." Strategic IT thus provides an anchor for competitive advantage—enabling the efficiencies, innovation, market expansion, speed, and alliances that differentiate one company from another.

The pressures of IT globalization have also posited new challenges for the education and employment of traditional non-management IT workers. The growth of offshore outsourcing and insourcing (foreign workers employed overseas by American companies) seems inevitable. Perhaps upwards of 100,000 new jobs that serve American markets have been created in India in the past 4 years at a time when employment in some sectors of the American software industry has seen notable decline (Howell, 2004). The Gartner, Inc., consulting group has projected that, while 5% or fewer of IT jobs have been globally sourced as of the first quarter of 2004, by 2010 nearly 25% of those jobs will be so situated (Gaudin, 2004). While the extent to which global sourcing will be, or should be, embraced is somewhat debatable, IT managers will certainly consider, and at least partially adapt to, this cost-reducing opportunity.

The strategic use of IT, combined with the movement for global outsourcing, forces non-management IT workers to be more knowledgeable about how IT contributes to the organization and to have higher-level IT skills. The framework suggested in this article will help to advance the skill level of such workers by a building a strategic perspective for IT work.

## BACKGROUND

Courses in management of information systems and technology, particularly leadership courses at the graduate level, have adapted to the paradigm of IT as strategic transformation agent. On the one hand, these courses, designed for managers, regularly include the use of information as a strategic resource and are amply supported by texts and other academic and professional literature. On the other hand, general undergraduate education in IT—that which produces the basic business information technology worker—continues to focus on producing programmers, systems developers, and systems analysts with first and second-era approaches to their work.

As both the expectations for IT increase and offshore sourcing becomes a reality, information technology education in the U.S. will need to adapt by moving beyond developing basic skills such as programming to developing higher-level skills, such as those required for communication, integration, project evaluation, and value assessment. In addition, the demands on IT to deliver better-faster-cheaper and the need for domestic IT workers to function as leaders and facilitators will require that *all* information technology workers adopt an entrepreneurial perspective consistent with third-era expectations. Organizations need more than traditionally educated programmers and analysts. They need business information technologists who understand such concepts as the organizational impact of IT, enterprise information architecture, enterprise application integration, rapid application development, and process re-engineering, and have good knowledge of analytical and value assessment tools. A basic characteristic of business information technologists should be that they are business information strategists who have, and apply, a strategic perspective toward their work.

The context for discussing and pursuing strategic IT has been developed primarily within the conceptual framework of strategic information systems (SIS). Basically, an SIS is one that supports an organization's competitive strategy—that is, its strategy for gaining advantage over its competitors (Ward, 1996). This concept, therefore, is primarily externally focused. The extension of that con-

cept internally, where strategy is implemented through systems design, redesign, and implementation, is a necessary requirement for fulfillment of better-faster-cheaper in today's IT environment.

Set within the framework of IT as a strategic resource, these realities dominate the contemporary environment, and are serious challenges to the pace and manner in which all IT workers work:

- The rapid pace at which new technologies (software and hardware) are introduced
- The demand for expedited development and implementation of new systems and technologies, leading to new processes and techniques
- Emphasis on value returned on investment
- Telecommunications integrated into, and inseparable from, the computing environment
- Process re-engineering
- Need for integration of seemingly incompatible diverse systems and technologies

The significant driving force behind these realities is the strategic use of IT, and the result is a heightened focus on value contributed by IT. In response, an effective information technologist adopts a strategic perspective that manifests itself in these work attributes:

- An appreciation of IT within the context of business value
- A view of information as a critical resource to be managed and developed as an asset
- A continuing search for opportunities to exploit information technology for competitive advantage
- Uncovering opportunities for process redesign
- Concern for aligning IT with organizational goals
- A continuing re-evaluation of work assignments for added-value
- Skill in adapting quickly to appropriate new technologies
- An object/modular orientation for technical flexibility and speed in deployment

## A FRAMEWORK FOR IT EDUCATION

Traditional tools for IT valuation, such as return on investment (ROI) and net present value (NPV), continue to be primarily the domain of financial analysts. IT managers have supplemented these tools with others that add qualitative assessment in addition to financial ones, for example Kaplan and Norton's (1996) balanced scorecard approach, which has gained wide attention. It attempts to apply metrics to an organization's value contribution components, such as customer service (Berkman, 2002).

The tools noted previously are management tools and many require complex analysis. The challenge of developing a strategic perspective for the non-manager business information technologist is to find simple but effective frameworks that can be used to develop the necessary work attributes within the context of SIS. The key question is, therefore: How can organizations get their non-management information technologists to think and act strategically?

The phrase "better-faster-cheaper" used earlier is a good characterization and summation of the concept "strategic". Because of its brevity and clarity, it is easily remembered and readily used internally, at the application implementation level. Information technologists with a strategic perspective can not only use better-faster-cheaper as a standard for examining the value added by information technology activities, but also to uncover IT strategic opportunities. This paradigm suggests important questions technologists should ask about their work assignments. These questions include: How does this IT activity create better products or processes for the customer? How does this IT activity support faster processes? How does this IT activity increase efficiency?

A framework for developing a strategic perspective should include these three elements in its foundation: 1) understanding of the business value of IT; 2) knowledge of key processes within the organization; and 3) understanding the precepts of business process reengineering (BPR) and its application.

The base for the framework, the first element, begins with understanding the potential strategic value of IT. IT is arguably the most disruptive force in organizations within many decades (Mendonca, 2003). IT can be either a driver, such as when it is *the* critical component of an organization's business function (Amazon.com and Ebay are examples); or it can be an enabler, in the case where it serves a significant support function (Federal Express Corp. is an example). In either case it can act as a change agent by being an enabler/driver of success or a significant inhibitor. In the extreme case, "IT can have a transformational effect on a business; IT can change a business in the areas of process, service, management, and even environment" (Luftman, 2004, p. 14).

In their classic work, which focused on the external (environmental) value of IT, Porter and Millar (1985) argued that IT could be used as an enabler of competitive advantage through the creation of new products and processes and the transformation of market forces. Charles Wiseman's strategic thrusts model (Wiseman, 1988) brings an internal perspective to the examination of the business value of IT. It recognizes that individuals and groups within an organization often have opportunities to contribute significant (competitive) value. Business value

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