Editor's Comments

Misconceptions About Strategic Information Systems

In our unrelenting quest for new jargon terms, we now have a new one: SIS, for strategic information systems. Books have been written on SIS, and entire conferences have been devoted to the topic. Much of this attention, I'm afraid, is rooted in some serious misconceptions about the strategic role of information systems.

I'm certainly not arguing that information systems do not have an important strategic role. Far from it. The title of my own book, *Management Information Systems—The Critical Strategic Resource,* attests to my conviction that an MIS has great strategic importance. Every organization must increasingly look to its information system as a critical component of its strategic assets. But arguing for a strategic viewpoint in developing an effective MIS is by no means the same thing as claiming that suddenly management has the opportunity to develop a new kind of system, called an SIS.

The concept of an SIS, as it is sometimes promulgated, has inherent flaws that can lead management to make some serious errors. Two of the more mischievous misconceptions about SIS are (1) the SIS is a thing apart from the organization's management information systems (or whatever term one chooses to use for the collection of the firm's information systems), and (2) an SIS can be implemented through a deliberate effort to build an information system aimed specifically at meeting strategic objectives.

Almost all of the information systems that have a legitimate claim to be strategic have roots in an effective transaction processing system. Consider American Airline's Sabre system, which provides one of the few examples of a system that has had an indisputably strategic impact on the business. Much of Sabre's strategy value comes from the way it thoroughly permeates many aspects of the airline's activities. Sabre supports external relationships with travel agents and frequent flyers, but it also has critical links with a wide variety of internal applications dealing with such detailed matters as yield management, scheduling crews and aircraft maintenance, and meal planning. Furthermore, the initial version of Sabre was installed nearly three decades ago with the relatively limited goal of improving the efficiency and accuracy of handling a growing volume of reservation traffic. The system has evolved to its present state only through a continued massive investment aimed at achieving constant improvements and added functionality.

It is inconceivable that Sabre could ever have been implemented initially as the strategic information system that it subsequently has become. No one is half that smart. Rather, Sabre provides an adaptive platform that enables American Airlines to build on its strengths as an aggressive and well-managed airline. The advantages that American Airlines has been able to sustain over a long period of time have come only through an enormous effort that presents a formidable moving target to its competitors.

There are some valuable lessons here regarding the nature of strategic information systems:

* Strategic advantages come often—"almost always" is perhaps too strong a term—from major enhancements in the efficiency and effectiveness at the operational level (a point made by Kim and Michelman in their article in this issue on hospital information sytems).

* Strategic systems come through a long-term adaptive process, rather than through a major breakthrough that brings quick rewards.

This point of view puts quite a different complexion on an SIS. It says that we cannot set out to develop an SIS; we can only develop an effective MIS. This proposition does not rest merely on an academic exercise in semantics. Rather, it goes to the heart of the process of developing information systems that have strategic relevance.

It is critical for an organization to focus the design of its information systems on strategic objectives, but it is a delusion to think that these objectives can be met through an independent SIS. A quest for such an SIS diverts attention from the very difficult, but far more rewarding, task of making continual improvements in the MIS in order to adapt to the changing strategic needs of the organization.

Information technology offers a variety of ways in which the MIS can contribute to the strategic objectives of the enterprise. Embedding greater "intelligence" within a transaction processing system offers one of the more attractive avenues. Product customization and the reduction of delivery time can also have important strategic effects. Clearly, information technology can play an essential part in making such improvements. All of these advantages are, in fact, very well illustrated by the XCON system developed by Digital Equipment Corporation, which is described in this issue's article by John Sviokla.

In searching for strategic opportunities, it is important to take a realistic view of what can be accomplished through strategic systems. My Wharton colleague, Eric Clemons, as well as others, reminds us that it is extremely difficult to gain a sustainable competitive advantage through the use of information technology. That shouldn't be too surprising: Adam Smith said as much over 200 years ago. It is difficult to sustain an advantage by *any* means, not just through technology. Competitive markets are *supposed* to squeeze out "excess" profits. Any advantage enjoyed by a firm is likely to be short lived if it comes only from technology; a sustainable advantage requires the organization to build a capability that others cannot duplicate easily or quickly. In short, a competitive advantage can be gained only by doing something difficult; if it's easy, others can do it too.

The ability of an organization to manage accelerated change looks like one of the more attractive means by which an organization might hope to sustain a competitive advantage. The competitive edge comes not from the firm's existing products and services, but rather its ability to change more rapidly and effectively than its competitors. This second-order effect is much more difficult to duplicate than any given existing set of products or services.

The ability to change is in part a technical issue, but it also requires a corporate culture that accommodates change. An adaptive MIS requires an infrastructure and implementation methodology that enables the organization to cope effectively with continual changes (in stark contrast to most existing systems built with an inflexible third-generation methodology). A corporate culture that accepts change stems from such hard-to-duplicate characteristics as the organization's reward system, the ability of its coordination mechanisms to deal with fluid task assignments, management's view of its workers, and the worker's feeling of shared participation in the fate of the enterprise. Building an adaptive technical and cultural environment is extremely difficult to achieve, and therefore organizations that are able to do it put themselves in a strong position to exploit this advantage.

Much of the discussion of SIS seems to ignore the adaptive process through which successful strategic systems must evolve. By focusing on the alluring but illusory goal of gaining a quick fix through information technology, management runs the risk of diverting resources from the arduous task of making unremitting improvements in the management information system.

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I regret deeply to report the death of John Weitzel of Syracuse University, who was one of our associate editors. John's sudden and unexpected death ends what promised to be a productive and rewarding academic career. He served very ably as a reviewer and then as an editor of the *Quarterly.* We will miss him greatly. An award in information systems has been started in his name. Further details follow the "Theory and Research" section of the *Quarterly.*

On a much happier note, Robert Bostrom of the University of Georgia and Iris Vessey of Pennsylvania State University have agreed to join the *MISQ* editorial board. I welcome their contributions.

Gerardine DeSanctis and Nicholas Vitalari leave the editorial board with this issue. I would like to thank them warmly for their excellent work over the past three years.

James C. Emery