

Special Issue Editors' Introduction

The field of strategic and competitive information systems has made considerable progress since the landmark papers of Greg Parsons (1983) and Warren McFarlan (1984). Progress has come on all fronts:

- As a discipline, we have better command of the issues that must be addressed, both to continue growth in the academic area and, equally significantly, to affect and improve best practice in the profession of managing information technology;
- As researchers, we have far better understanding of the tools and methodologies needed to investigate issues in strategic information technology, again both to satisfy the demands of academic reviewing and to defend results before interested and yet skeptical practitioners facing million-dollar decisions;
- Naturally, as a result of better focus on strategic issues and better command of research methodologies, the field has produced results that are of significant benefit to executives—both senior members of the general management team and specialists in information technology.

Issues

Information technology has rapidly grown to become one of the largest industries in the world, of tremendous economic significance. Despite thousand-fold reduction in unit costs—for processing, memory, all aspects of computing—spending on information technology continues to increase. In many service industries, information technology is the largest single expense item after personnel. Intuitively, we believe that the impact of this technology should be enormous. We see industries that have already undergone dramatic restructuring. The role of stock markets, for example, appears permanently altered, and the profitability of their member firms appears permanently reduced by the impact of computers on market transparency and efficiency. And yet, as Strassman (1990) has shown, the economic benefits of computing are elusive and difficult to demonstrate.

The following issues are being investigated by university researchers in strategic systems, often with industrial support or in conjunction with teams of systems professionals:

- When are systems strategic? When do they produce competitive advantage? What conditions in innovating firms and in their industries determine when advantage can be sustained?
- What effects will systems have on the structure of firms and on entire industries? In *The Visible Hand*, Chandler (1977) describes the structure of firms late in the last century. The degree of vertical integration today appears quaint, archaic, amusing: breweries owned forests so that they were assured a supply of timber needed to make kegs, and meat packers owned the first refrigerated rail cars to assure that they would be available to take their product to market. Malone, et al. (1987) argue that information technology reduces transactions costs, with predictable implications for outsourcing and restructuring. Which firms will win and which will lose as a result? Who will have to change?
- How can strategic systems be valued? How can investment decisions be rationally made? How can the risks of large-scale implementations be managed?
- How can the market for systems innovations be modeled? What are the implications for profits, and for social welfare, of various competitive structures?
- What other general issues must be addressed in information economics?
- How are systems best constructed? What does recent progress in technical support for systems development and implementation imply for best practice? This is not merely a tactical issue of concern to the systems staff. In many industries, especially in financial services, the profitable lifetime of products is measured in months or even weeks. A delay in implementation can determine the

difference between profitable harvesting of benefits and an unprofitable investment in preserving parity.

- What organizational factors affect successful implementation? What determines which firms invest in innovation? What determines which maverick champions get the necessary resources and succeed for their companies?

Methodological Progress

Early work on strategic information systems used informal anecdotes to argue for the plausibility of their conclusions. Some findings no doubt were correct. Others, like many plausible theorems in calculus before the development of real analysis, turned out to be suspect. Recent progress in the results of our field are due to improved methodological techniques:

- There continue to be theory papers, which argue from first principles, generally using the reference disciplines of industrial organization, transactions costs, and other forms of neo-classical economics. Much of this work is informed by business experience, generally selected from a growing set of carefully documented and studied industrial cases. Additionally, the best of this work offers testable hypotheses, which can be studied and evaluated with empirical support. This work can be seen as inductive, synthesizing from a body of experience.
- There has recently been an increase in the acceptability of case-based empirical research in the MIS research community (as defended by Lee (1989)), associated perhaps with the increase in publication of documented, refereed case studies. The best of these are deductive, attempting to develop or test general theory based on experience and observation. These studies play a crucial role in our research discipline. With implementations costing millions, even hundreds of millions of dollars, replication, large samples, and control groups are virtually impossible to arrange; one can scarcely recommend that firms undertake systems that will not be business successes, or that use less than the best available development methodologies, simply to verify a theory. Often the best a researcher can do is to conduct a quasi-experiment, finding business cases that can be compared on salient characteristics, to lend or remove support for hypotheses under investigation.
- Formal modeling of business environments facing systems innovations, or resulting from such innovations, are becoming more robust.
- Some issues in strategic systems can be investigated with statistically significant data sets. We have become more adept at finding and gaining access to industry association data and other longitudinal databases, needed to evaluate hypotheses in the strategic impact of information systems. Other hypotheses, pertaining to individual firms, are best investigated with behavior research methodology, employing smaller samples and open-ended questionnaires or interviews.

Recent Research Findings: The Articles in This Special Issue

The articles in this special issue are representative of current research in strategic systems. Each article addresses one of the issues summarized above, using one of the research techniques that have been shown effective for our discipline. And each article has relevance, both for the academic community and for executives who must confront the challenge of managing a rapidly changing technology.

- Clemons and Row show why, even when everything goes well with the implementation process, innovative applications may not confer sustainable competitive advantage. Technology can be copied, and sustainable advantage often requires differences among firms more than aggressive use of technology.
- Papers by Bakos, and by Barua, Kriebel, and Mukhopadhyay study the implications of information technology in competitive markets. Bakos examines the impact of systems on traditional markets. Barua, et al. model competition through information technology innovation.

- Harris and Katz, and Beath show that things do not always go as expected in the use of information technology. Their articles also examine factors that lead to successful strategic use.
- Banker and Kauffman investigate the use of the most current systems development methodologies and their impacts on the costs and development time associated with strategic implementations; these factors often influence competitive outcomes.

We are confident that this Special Issue represents a valuable snapshot, capturing the state of research in strategic information systems at this time. Moreover, we are confident that researchers will reference the articles included here and find them valuable in their own efforts to extend the discipline.

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