
Editor's Comments

One mission of the *MIS Quarterly* is to bridge between university and industry. Our Application section presents original, high-quality scholarship that is of interest to, and readable by, executives. Our executive briefs are also intended to make our scholarship more "user friendly." We also seek involvement from information systems practitioners on our editorial board. For instance, I am pleased to announce that Dr. David Morgan, Director of Information Services for the City of Dallas, Texas, has agreed to join the board. David, who has long served the *Quarterly* as a reviewer, is a past winner of the Society for Information Management International's Partners in Leadership Award. He also still finds time for university teaching.

The Society for Information Management (SIM), a professional society composed primarily of senior information systems executives, shares David Morgan's commitment to both scholarship and education. SIM International co-sponsors the *MIS Quarterly*, is among the sponsors of the International Conference on Information Systems (ICIS), awards introductory memberships to students chosen for the annual ICIS doctoral consortium, and oversees the Advanced Practices Council—SIM's research affiliate. Several academicians, including the senior editor of *MISQ*, sit on SIM's board of directors and, thereby, have an opportunity to influence policy related to university relationships. Local SIM chapters and individual SIM members fund scholarships, serve on advisory boards, participate in curriculum design task forces, and provide internships to students. They also help with research projects, participate in the development of teaching cases, serve as guest speakers, and assist the university community in many other ways. Some chapters have educational liaisons among their official offices.

In the comments below, Robert Rubin, president of the Society for Information Management, joins me in calling for further advancement in the relationship between the Society for Information Management and the academic community. Our specific concern is how we shall educate tomorrow's business leaders about information and information technology.

First, however, I am delighted to announce the following additional appointments to the *Quarterly's* editorial board: Dennis Adams, University of Houston; Sid Huff, University of Western Ontario; Sal March, University of Minnesota; Peter Todd, Queen's University; Rick Watson, University of Georgia; and Peter Weill, University of Melbourne. Each of these new board members has an excellent research record. But they have also demonstrated, through their timely and able efforts as *Quarterly* reviewers, the ability to add substantive value to the work of others. I am also pleased to announce that Iris Vessey has been reappointed to another term on the board, reflecting her outstanding contributions over the past three years.

—Blake Ives

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Educating Tomorrow's Business Leaders About Information and Information Technology

Few will disagree that information technology will be, along with human resources, a key building block in the design of tomorrow's organizations. More than anything else, organizations are information processing systems. Competitive necessity and human desire for efficiency have meant that the technology of the day, be it filing cabinets, carbon paper, and roll-top desks, or image processors, cellular networks, and laptop workstations, be aligned with workers so as to best process required tasks and to reduce environmental uncertainty.

Aligning new information technologies to information processing requirements of the organization is increasingly becoming the responsibility of non-information systems professionals. Easy-to-use systems, automated tutorials, rapid technological improvement, declining costs, and familiarity with prospective application areas all push much of the responsibility for information technology into the hands of end users. At the same time, other factors provide compelling justification for centrally managing some aspects of information technology. These include the need to establish synergy across the organization, to develop applications that span internal and external organizational boundaries, to re-engineer systems around fundamental business processes, to pursue economies of scale from investments in technological infrastructure, and a continuing need to maintain legacy systems.

The consequence of these competing forces has been a continuous realignment of responsibilities for information technology among end users, vendors, systems integration houses, and internal information systems providers. Even within the information systems organization there is turmoil as this group seeks to balance the need to be familiar with more and more technologies with an equally compelling need to be effective communicators with user champions of change. This fracturing of technology responsibility within firms mirrors a similar fragmentation within the education community. Responsibility for some elements of information technology education is diffusing out to other disciplines. This turmoil suggests that we must continually re-evaluate what tomorrow's business leader will need to know about information and information technology and then decide where and how it can best be taught.

Generally, this discussion falls into two categories. The first centers around the curriculum for students choosing to major in information systems, particularly undergraduates. The second is the required course intended for all graduating MBAs. We consider each below.

Until the last few years, the curricular migration path for the undergraduate information systems major has been fairly easy to follow. Twenty-five years ago, students in some educational environments were still learning to wire boards for accounting machines. The transition to assembler language and then to COBOL and then structured COBOL was a near-natural migration. So, too, was the change in emphasis from programs to data and from files to databases. The dominance of IBM, the high costs of computers, and the U.S. military establishment's influence over programming languages provided three stabilizing factors. Today, many undergraduate programs continue to follow this same evolutionary trail for their information technology majors. Many continue to teach COBOL, but with considerable soul-searching. Those that elect to change direction are faced with a myriad of alternatives, each with vocal proponents. Client/server technologies, graphical user interfaces, multimedia, visual programming languages, UNIX, object-orientation, and CASE tools are among the potential choices.

There is also confusion about the balance between technology and management skills required for undergraduate majors. Today's typical telecommunications course continues to describe how bits and messages are moved rather than how advances in these technologies permit organization, industries, and institutions to be redesigned. Creativity and design skills are given little attention in a curriculum that is instead largely focused on rationality and logical analysis.¹ Students often graduate with a set of technological skills for which there will be a declining market and stiff competition from experienced practitioners. Moreover, these graduates often envision their careers as experts developing systems based on the requirements of relatively passive users. In reality, they will increasingly find themselves serving as facilitators and integrators, or intermediaries between users and the external marketplace for information services. Although they may view themselves as change agents, they will be poorly equipped to enlist, empower, or support change agents within the user community.

We need to better forecast the jobs and required skills our undergraduate information systems majors are going to obtain over the next five to 10 years, as well as the balance between technology and management that will best serve industry and the graduates. Industry, meanwhile, may wish to turn to the university for assistance as it seeks to reposition the existing systems work force to the requirements of this new environment. This interdependence offers rich opportunities for us to work together to transform the

¹ This issue's article by Couger, Higgins, and McIntyre examines the issue of creativity and the information systems professional.

information systems work force to meet tomorrow's reality. But, if we fail to adjust we will, like early World War I military leaders who placed their confidence once too often on horse-mounted cavalry, risk becoming irrelevant.

The required graduate course in information systems presents its own problems and opportunities. Organizations are rarely transformed by the efforts of their systems professionals. It is instead their partners within the business units who are best positioned to serve as the real agents of change. Graduate MBA programs educate many of these change agents. We must therefore consider carefully the skill set the prospective information champions will require. Certainly, all MBAs must be equipped to use information technology to enhance their own productivity. They must be comfortable with a word processor, spreadsheet, statistics package, graphics presentation software, database manager, external databases, and electronic mail. They will also benefit from knowledge of multimedia, remote servers, the Internet, contact management software, and an electronic calendar. A tools course could be built around such applications, but it will be difficult to justify giving graduate credit as these packages become simpler and simpler to use. Alternatively, students could be outfitted with an MBA workbench of standard applications. Automated tutorials could make it possible to learn these applications in the weeks before arriving on campus, or orientation might feature "not-for-credit" information technology tutorials.

But what then will be the content of the core MBA course? Or is there no longer a common body of knowledge that we can agree every MBA should be exposed to? Approximately half of leading U.S. MBA programs today offer a required course in information systems. Of those that do, there is considerable variation in the content. Inexperienced students, and often corporate recruiters, value tools courses. Conceptual tool mastery can go well beyond the toolkit applications described above. Among the obvious candidates are database design, user interface design, requirements determination and systems analysis methodologies, work flow analysis and simulation, cost-benefit analysis techniques, systems theory, project management frameworks, or the heuristics of business process re-engineering. A second variation of the core course might take a deeper look at technology and expose students to applications of technologies such as EDI, expert systems, neural networks, national data highways, or image processing.

These alternatives provide a "supply side" view of information technology. The emphasis is on the technology, the process by which that technology gets applied to business problems, or the organizational structures required to manage information technology. An alternative curricular vision provides a demand-side view of information technology. Not how do we make it work, but what can it do for us? Here our attention turns to applications of information technology as competitive weapons, as control devices, or as repositories of organizational memory. Here we see information technology used in support of customer service, as a distribution channel for knowledge-based products and services, as a highway connecting suppliers and customers, and as a building block of organizational and societal re-engineering. Is it this deep conceptual and economic, rather than technical, understanding of information and information technology that will be of critical importance to the organization designers of the future? And is this an opportunity within the MBA curriculum for students to focus on synthesis, as well as analysis?

Whether it be at the undergraduate or graduate level, we face a time of considerable flux in information systems education. Although the future of our field holds great promise for all of our students, we have not sought broad consensus on curricular issues. There is also a largely untapped opportunity to capture economies of scale and consistency in educational offerings. The information systems community has been slow to adopt computer and communication technology to our educational mission. Business schools remain very much in the exploratory stages when it comes to shared databases of information systems pedagogy, electronic bulletin boards focused on particular courses, or directories of cases, curriculum, videos, and the like. Are we to be the cobbler's children without shoes or the engineer still armed with a slide rule? Our field could be at the leading edge of initiatives in distance learning, international student project teams, multimedia-based case studies, and the use of networked computers in the classroom. We have an opportunity here to set a rich example for colleagues in other fields and in in-

dustry. These practical applications also represent exciting research opportunities and will provide an early understanding of how education and the educational establishment will be transformed by information technology.

We envision a role for both SIM and the *Quarterly* in this initiative. SIM continues to represent the primary customer for information systems majors. SIM members also will increasingly find themselves forced to manage change through the graduates of our MBA and executive education programs. It is therefore to SIM's advantage to work closely with the university—perhaps its most important supplier. SIM is concerned with the skills incoming employees will need rather than the details of the curriculum. But SIM and SIM Chapters can play a significant role in bringing professors and practitioners together to discuss skill requirements, in encouraging universities to be more proactive, and in providing further opportunities for students to learn about the realities of systems within organizations. SIM could also assist universities by helping to establish a consistent set of academic support programs with vendors of information technology. One continuing problem facing universities is finding the resources necessary for staying technologically current in the face of dramatic technological change and product cycle time reductions. Although many vendors generously provide products to universities at reduced prices, there is considerable variation in the qualifications and procedures to be followed.

SIM seeks to strengthen its relationship with the university community. The SIM board of directors has therefore commissioned a task force of academicians and senior information systems executives to explore the synergies possible from an increasingly broad alliance between the academic and practitioner communities. This major strategic thrust can be the foundation for meeting the educational challenges we face.

The *Quarterly* joins SIM in this important mission. We have previously discussed in these pages the role academic professional associations can play in curricular design.² Curricular issues have not been ignored by groups such as the Association for Computing Machinery (ACM) or the Data Processing Management Association (DPMA), but we believe there is a real need for a wide-ranging exploration of information technology education within the business school context. The *MIS Quarterly* has therefore commissioned a future special issue devoted to information systems curricula and pedagogy. A distinguished advisory board joins Guest Editor Ted Stohr in driving this initiative forward.³ It is our hope that the forthcoming papers will be timely and carefully researched. We hope, too, that they will reflect revolutionary as well as incremental approaches for educating tomorrow's business leaders about information and information technology.

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MIS Quarterly

Robert Rubin
President
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² Dickson, G.W., Emery, J.C., Ives, B., King, W.R., and McFarlan, F.W. "Professional Societies: A Service to Members and Professional Leadership," *MIS Quarterly* 17:1, March, 1993, pp. iii-vi.

³ A call for papers for the special issue appears on page Iv.