MIS Quarterly

ISSUES AND OPINIONS

WHOM ARE WE INFORMING? ISSUES AND RECOMMENDATIONS FOR MIS RESEARCH FROM AN INFORMING SCIENCES PERSPECTIVE[1]

By: **Grandon Gill**
Information Systems and Decision Sciences
College of Business
University of South Florida
4202 East Fowler Avenue, CIS 1040
Tampa, FL 33520-7800
U.S.A.
ggill@coba.usf.edu

Anol Bhattacherjee
Information Systems and Decision Sciences
College of Business
University of South Florida
4202 East Fowler Avenue, CIS 1040
Tampa, FL 33520-7800
U.S.A.
abhatt@coba.usf.edu

Abstract

This paper provides an introspective assessment of the current state of management information systems as a research discipline using the "lens" of the informing sciences. Based on this assessment, we observe that the degree to which MIS research is informing its key external clients—practitioners, students, and researchers in other disciplines—has declined over the years. This problem is particularly acute with respect to informing practitioners. Unfortunately, practitioner support may be critical in making up for lost resources caused by declining student enrollments. Despite this dire prognostication, we believe that it is possible to reverse this trend. Drawing upon cognitive science and diffusion of innovations research, we analyze the source of the problem and then present five recommendations aimed at leading MIS journals, scholars, and professional societies for improving the ability of MIS research to engage and inform its external clients.

Keywords: Management information systems, informing sciences, practitioner, rigor, relevance, resonance

Introduction

The management information systems discipline today faces several major challenges that can potentially undermine the value of our research activities and our continued growth as an academic research discipline—if not our very survival. These challenges can be divided into three categories:

(1) *Research challenge*: What should we be researching and how should we be conducting such research?

(2) *Informing challenge*: How do we ensure our research gets out to our potential clients?

(3) *Resource challenge*: Where do we get the funding necessary to support our research activities?

While prior commentaries have examined the research challenge faced by MIS researchers (e.g., Benbasat and Zmud

[1]Carol Saunders was the accepting senior editor for this paper.

1999) and others have commented on the resource challenge (e.g., George et al. 2004), the informing challenge has received scant attention. In this "Issues and Opinions" piece, we employ the informing sciences framework to analyze how well MIS research is informing its external clients and present a set of recommendations—aimed at MIS journals, academics, and professional societies—to help increase the effectiveness of our informing activities.

The Informing Sciences Framework

Informing sciences is a transdiscipline that was established in the mid-1990s as a multidisciplinary alternative to the more business-focused MIS discipline (Cohen 1999). This transdiscipline draws participants from a wide range of fields, including business, computer science, education, visual and performing arts, library and information science, and philosophy, whose common goal is to design and study systems that can inform clients more effectively.

The conceptual framework employed in the information sciences transdiscipline is that of an informing system (Cohen 1999), which views processes through a sender–channel–client lens, similar to Shannon and Weaver's (1949) information theory. Of particular interest to the MIS discipline is the *academic informing system,* a complex system with dual missions of knowledge creation (research) and knowledge dissemination (teaching). This system can be conceptualized as a pair of symbiotic informing components: (1) a *disciplinary system*, which spans across institutions and is responsible for knowledge creation and knowledge dissemination activities within the discipline, and (2) an *institutional informing system*, whose role is to provide the infrastructure to allow disciplinary activities to occur and to maintain the portfolio of disciplines that best fulfills its own mission of informing external clients, such as students, local communities, and funding sources (Gill and Bhattacherjee 2007).

Informing systems are defined at three levels of abstraction (Cohen 1999): (1) the *informing instance*, where actual informing activities occur; (2) the *constructing entity*, where new informing instances are created; and (3) the *design entity*, where fundamentally different new patterns of informing are established. In the academic informing system, faculty members act as informing instances for both the discipline (e.g., disciplinary teaching) and the institution (e.g., service teaching), while departments serve as constructing entities for the discipline (e.g., producing doctoral students) and the institution (e.g., recruiting faculty and instructors).

The academic informing system serves a variety of internal and external clients. Internal clients include other researchers within the discipline, who are commonly informed through "pure research." External clients, within the MIS discipline, most commonly refer to: (1) practitioners, such as industry/academic collaborators and consultants, who are typically informed through "applied research," (2) students, who are informed through teaching, and (3) scholars in other disciplines, who are informed through research and multidisciplinary collaborations (Gill and Bhattacherjee 2007). Certainly other types of clients—such as granting agencies—exist. But, in the United States at least, they tend to be less central to MIS than they are for other related disciplines, such as computer science or engineering. Both internal and external clients are important for the sustenance and growth of an academic information system. Without informing activities directed at internal clients, the state of knowledge in the discipline is unlikely to advance. External clients serve as valuable sources of resources that are needed to sustain disciplinary activities such as research and doctoral teaching. In return for resources, external clients expect value from the academic system. For instance, students expect a strong curriculum and a good education, businesses expect suitably educated students who can serve as employees, and non-disciplinary researchers expect knowledge that they can apply to their own disciplines. We now consider how the MIS discipline is currently serving these clients.

The Practitioner Client

The community of MIS practitioners is a highly desirable client of the MIS discipline because this community can supply resources to the discipline directly, through consulting and grants, or indirectly, through employing graduates, which serves to increase the perceived value of, and demand for, MIS education among future students.

One indicator of the extent to which the MIS discipline is informing practitioners can be found by examining the level of academic–practitioner collaboration in the principal research outlets of the discipline. Such collaborations are *de facto* evidence of mutual informing. Figure 1, expanded from prior research (Gill and Bhattacherjee 2007), presents the annual percentages and numbers of articles appearing in *MIS Quarterly* with at least one practitioner author, beginning with the journal's inception in 1977 through the end of 2006. The results show that until about 1990, practitioner contributions represented a significant fraction of the journal's content. Such contributions, however, have all but disappeared in recent years. Of course, exceptions to this trend exist—for example, Markus et al. (2006), recipient of the "Best Article"

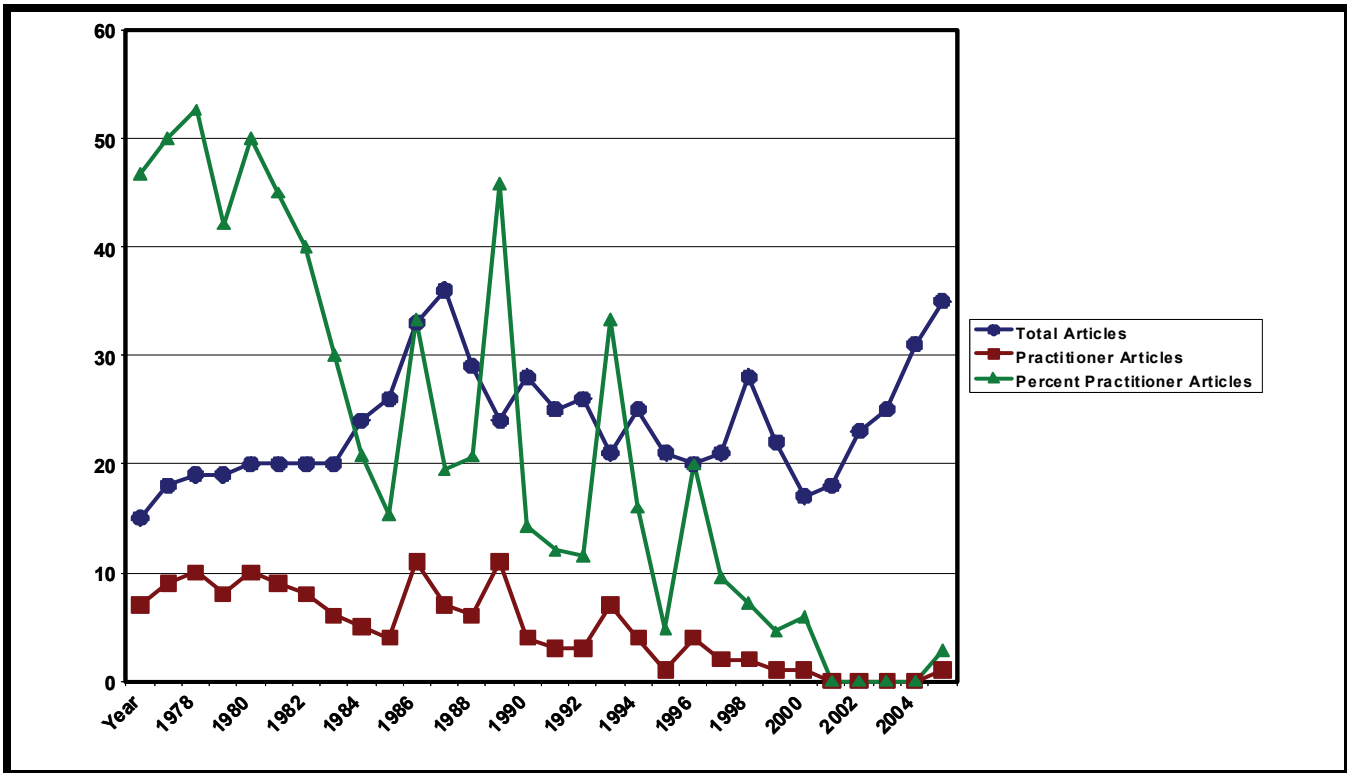

Figure 1. *MIS Quarterly* Articles with at Least One Practitioner Author (1977–2006) (Adapted from Gill and Bhattacherjee 2007)

award for 2006—demonstrating that the journal is still receptive to and appreciates such research should authors submit it. Thus, the lack of collaborative efforts appears to be due to lack of researchers' motivation, rather than due to editorial barriers to their publication.

The observed reduction in academic–practitioner collaborations in *MIS Quarterly* is consistent with the journal's evolving objectives. When founded in 1977, the journal's original mission explicitly included communicating to practitioners (Introna and Whittaker 2004, p. 110). In 1995, *MIS Quarterly* subscriptions were unbundled from Society for Information Management (SIM) membership, meaning that most of these practitioners stopped receiving copies of the journal. Since the rewards for MIS research are principally acquired through publication in premier journals (Gill 2001), *MIS Quarterly*'s drift away from emphasis on direct communication with practice reduced the incentive for top MIS researchers to place a heavy weight on achieving such communication as part of their research designs.

It is also evident that a very serious perception problem regarding the contributions of MIS research to practice exists. A recent major report by AACSB International specifically focused on the impact of business research. Within the report, existing areas of research impact by discipline were identified. The finance discipline, for example, had six areas listed—portfolio selection, irrelevance of capital structure, capital asset pricing, efficient markets, option pricing, and agency theory—all of which would be familiar to any well-informed business researcher or finance practitioner (AACSB 2008, p. 18). MIS impact was described as follows:

> In information systems, the research of Malhotra has helped companies to understand why knowledge management systems fail and Bass's Diffusion Model has had practical applications for forecasting demand of new technologies (AACSB 2008, p. 19).

The examples identified were not exactly a testament to the visibility of MIS disciplinary research: the Bass diffusion model was developed by a marketing professor (Rogers 2003) and Malhotra's research has, for the most part, emphasized impacting practitioners directly—through the BRINT Institute—instead of through publication in premier research outlets, such as *MIS Quarterly*. The validity of the report's

perception is clearly moot. However, it should not be ignored, because the authors of the report—principally administrators from other business disciplines—are drawn from the same group of institutional leaders that ultimately plays a major role in deciding what share of institutional resources are allocated to MIS disciplinary research vis-à-vis that of other business disciplines.

The Student Client

Students are important clients for the MIS discipline because their tuition and fees directly contribute resources to the discipline. In return, we prepare them with the knowledge and expertise needed for gainful employment in the industry. Although MIS research has always had a technical side and a behavioral side, over the years, and at the urging of leading scholars (e.g., McKenney 1985, p. 406), our research has gravitated toward the behavioral side. In contrast, a large percentage of curriculum content, particularly at the undergraduate level, has remained technical. For example, programming, databases, telecommunications, and systems analysis and design are all technical content areas that are considered to be core courses in most U.S. MIS programs (Gill and Hu 1998) and over three-quarters of U.S. faculty in the AIS database report teaching in one of these areas. Most U.S. faculty members who teach these topical areas, however, are not engaging in related research (Gill and Bhattacherjee 2007).

Figure 2 illustrates the overlap between research activities and teaching activities listed for U.S.-based MIS faculty members included in the AIS faculty database. In this figure, the circles labeled "Teaching…" represent faculty members who report teaching in that area. The concentric circles represent faculty who either do research directly related to the topic (inner circle) or more broadly related to the topic (outer circle, which includes the inner circle). The overlap percentages demonstrate that if we happen to conduct research related to one of the four core areas, we are very likely to teach it as well (e.g., 66 percent of MIS faculty who conduct research related to programming also teach programming). The non-overlapping percentages are a consequence of misalignment between the areas where MIS faculty do the bulk of their teaching (in terms of number of students) and the topics that they most often research. This explains why, for example, 85 percent of the individuals teaching programming are not engaged in research related to programming. The large circles at the bottom overlap where *any* of a faculty member's teaching and research areas overlap (since some faculty teach or research in more than one of the four core areas).

Although there is nothing wrong with researching topics that are different from what we teach, from a resource standpoint, this misalignment leaves MIS researchers more vulnerable to resource shortfalls. We can group most MIS courses into four categories: (1) *survey and introductory courses*, which generate the largest share of institutional resources, but do not depend heavily upon the instructor's research, (2) *advanced courses for professional students outside of one's research area*, which also generate institutional resources, depending upon enrollments, but also do not benefit from the instructor's research, (3) *advanced courses for professional students within one's research area*, which also generate resources—again, depending on enrollments—and are likely to benefit from the instructor's research, and (4) *advanced courses for future disciplinary researchers*, which typically consume institutional resources—doctoral programs are expensive—and benefit strongly from the instructor's research activities. Positive net resources are associated with research activities in only one these categories: Category 3. However, the availability of faculty to teach Category 3 courses will, to a great extent, depend upon the institution's continued willingness to support Category 4 activities, since any institution that eliminates or dramatically curtails its doctoral program is likely to become much less attractive to productive research faculty. Furthermore, eliminating doctoral programs will lead to fewer graduate student instructors, which will increase the amount of time researchers must spend teaching introductory courses. Thus, when an institution is prioritizing funding across disciplines in a resource-constrained environment, a natural question to ask is: How much Category 3 revenue is impacted—as a consequence of faculty attrition or absence of doctoral student instructors—when funding for both research and Category 4 activities is reduced? Unfortunately, the technical–behavioral dichotomy in MIS tends to make Category 3 courses a much smaller proportion of total enrollments in MIS than it would be in most disciplines. Thus, from the institution's perspective, the loss of Category 3 enrollment revenue expected to result from cuts to MIS research funding (e.g., by requiring higher teaching loads, fewer and larger classes, reduction or elimination of graduate support, and by suspension of research faculty hiring along with tolerating increased attrition) will be correspondingly smaller than for other disciplines. This situation is likely to persist as long as the misalignment between core MIS curriculum and research agenda continues.

Clients from Other Disciplines

Some researchers have suggested that MIS should serve as a reference discipline for other disciplines (Baskerville and Myers 2002). One way of assessing service to external clients

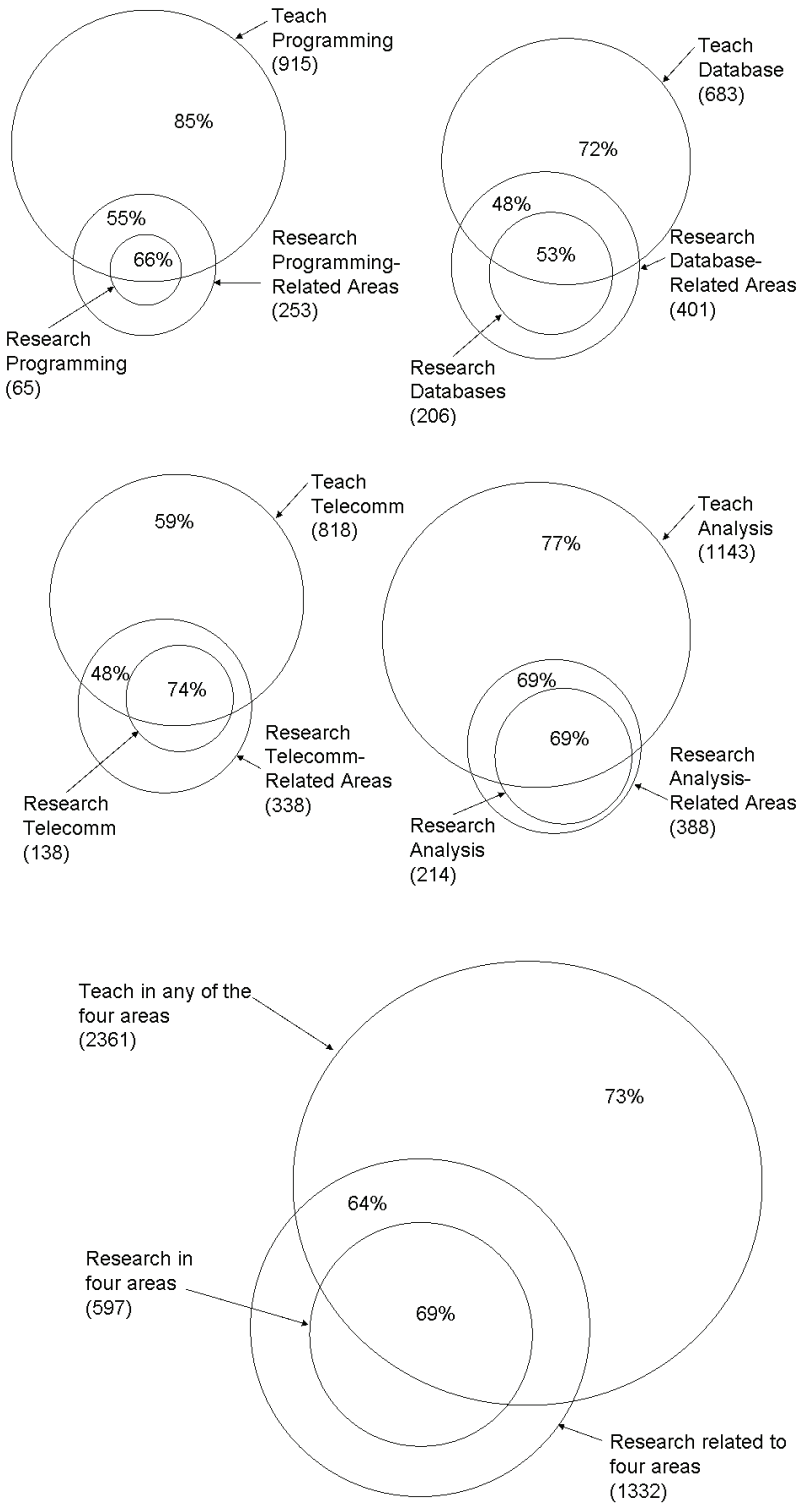

Figure 2. Overlap Between MIS Research and Teaching

is by examining citation patterns of MIS research papers and publications. A recent study of citations among top journals (Wade et al. 2006) found that MIS publications scored second from the bottom (just ahead of ethics) in terms of being cited by publications in other disciplines, with 0.19 out-of-field citations per article. This study also reported that non-MIS citations of MIS research articles have been decreasing over time (since their peak in 1997), with external citations as a percentage of citable articles dropping since 1992. This drop in citations cannot be attributed entirely to the general trend of creating disciplinary silos in all business disciplines, since International Business—another relatively young discipline—experienced an increase in outside citations over the same period (Wade et al. 2006, p. 260).

Magnitude and Scope of the Informing Problem

Before exploring potential ways of redressing the informing problem in MIS research, we consider two questions:

(1) Does the informing problem extend beyond the MIS discipline?

(2) Is this a global problem?

Informing in Other Business Disciplines

As MIS researchers, we can take heart in the fact that our informing problem is not unique to MIS, but has also been observed in other business disciplines, such as marketing (Tapp 2004), accounting (Maher 1995), and operations research/management science (Barman et al. 1997). The management discipline, in particular, has been very systematic about documenting the nature and extent of this problem. Recent commentaries from the leading scholars in management have observed that (1) of the 50 most important management innovations, none have originated from academic research (Pfeffer 2007, p. 1336), (2) many of the most fundamental findings in human resources management research are widely disbelieved by HR managers (Rynes et al. 2007, p. 988), (3) managers use far more tools developed by consultants or other companies than tools developed by academics; they are also happier with those nonacademic tools (Pfeffer and Fong 2002, p. 88), and (4) important management ideas are most likely to originate in practice and then flow to academia, rather than the other way round (Barley et al. 1988). On the education side, the management discipline has speculated that when it comes to informing students, business schools may be doing more harm than good (e.g., Ghoshal 2005; Mintzberg 2004).

Although MIS is not alone in facing an informing challenge, our severe drop in recent student enrollments has created a resource crisis more severe than that faced by other disciplines. MIS, therefore, needs to address the problem earlier than others if it wants to survive. Through the beginning of the millennium, institutional support to MIS units was easily justified by the growing population of students attracted to the discipline, bringing with them tuition dollars. Since that time, however, MIS program enrollments have plummeted (George et al. 2004), while enrollments in other disciplines, such as marketing, accounting, and management, have not. If this enrollment trend does not reverse itself dramatically, institutions are bound to start questioning whether our existence as a separate research department is justified. Other resource-constrained business disciplines—such as productions and operations management, decision sciences, and statistics—have faced this problem in the past and, at many institutions, have ceased to exist as independent disciplines. Owing to technology's ubiquity in business, information systems concepts—not necessarily built upon MIS research—are already infused in many other business disciplines, such as accounting (accounting information systems), marketing (electronic business, data mining, and supply chain management) and management (technology-related behavioral research). Hence, our research may not be unique enough to prevent its absorption within other business disciplines. In fact, 2 of the top 10 MIS departments ranked by research productivity (Dennis et al. 2002 cited in Gill and Bhattacherjee 2007) have recently completed, or are in the process of, merging with other departments. Thus, we perceive that the status of MIS as an independent research discipline may be at risk, and that high research productivity will not, by itself, guarantee the continued autonomy of an MIS department.

Is there any further evidence to support this position? One informal test is to examine the level of support for MIS research at research institutions that are not overly concerned with attracting students. Highly competitive private business schools affiliated with research institutions serve as an excellent test case. These schools have a pool of qualified student applicants far exceeding what they can admit, thereby insulating them from the impact of enrollment swings. The large endowment base of these institutions, often built with contributions from the practitioner community, also permits them to recruit prominent researchers in any field that they choose to emphasize. Strong support for MIS research at these institutions would suggest that they view MIS as important for connecting with today's businesses and for building tomorrow's business leaders.

On a ranked list of business school research programs based on journal page counts (Dennis et al. 2002 cited in Gill and Bhattacherjee 2007), the top five business schools were Wharton, Harvard, Stanford, University of Chicago, and Northwestern, all of which are well endowed and routinely rated at or near the top for their MBA and other academic programs. MIS research output from these schools is highest for Harvard, coming in at a dismal 18th, followed by Wharton (37th), and Stanford (45th), while Chicago and Northwestern did not make the top 100. Given the resources available at these universities, such MIS research rankings imply a conscious decision on their part to not strive for MIS research productivity.

Furthermore, most of the aforementioned schools do not have a separate MIS department and have come to view MIS as a topic that can be integrated into courses from other disciplines rather than being presented independently. A recent study of MBA curricula (Shore and Briggs 2007) found that not one of the top 20 U.S. business programs, as ranked by *Business Week*, had an MIS course in its required core curriculum. Given the visibility and prestige of these institutions, the priorities that they have set for MIS research and curricula are not likely to go unnoticed amongst more resource-constrained institutions.

Informing in the Global Context

To what extent is the MIS informing problem a global problem, as opposed to a U.S. problem? Most of our observations and inferences have been based on databases that are heavily dominated by U.S.-based MIS academics (e.g., the AIS faculty database). Although conclusive data from many parts of the world is not available, whatever evidence exists suggests that the informing problem—and, in particular, the related resource issue—may exhibit substantial regional differences.

Within the Asia-Pacific region, an extraordinary diversity of MIS programs exists. Mature programs exist in locations such as Australia, Singapore, and Hong Kong, with a typically heavy representation of researchers from these areas as both authors and editorial board members for leading publication outlets such as *MIS Quarterly* and *Information Systems Research*, as well as in regional conferences (Chau et al. 2005). The educational and research models of MIS programs in these countries have been heavily influenced by the West, since many of the faculty in these institutions acquired their doctoral education in the United States and the United Kingdom. The informing challenges faced by these institutions are similar to those of U.S. programs, although their resource challenges may be somewhat cushioned by their proximity to and ability to draw students from other Pacific Rim countries experiencing rapid MIS enrollment growth, such as China and India. For example, Australia is currently a destination for 11 percent of all international students and New Zealand accounts for 4 percent (Graddol 2006). Hence, the severity of resource constraints currently faced by U.S. researchers is unlikely to be experienced in Asia-Pacific universities, at least for the time being.

In populous countries such as China and India, MIS research is still young, being stimulated by relatively recent Western trends toward offshoring, and enjoys a growing student base (Chau et al. 2005; Ji et al. 2007). A growing population of local MIS researchers will likely be required to meet the education needs of local students. This is part of a global trend in which fewer students from these countries are expected to seek degrees from the United States and other English-speaking nations in the coming decades (Graddol 2006). Already, U.S. universities are seeing a drop in international student enrollments that cannot be attributed solely to visa-related problems following the 9/11 terrorist attack (Naidoo 2007). Thus, while expected enrollment growth may allow researchers in the Asia-Pacific region to postpone the resource concerns that accompany the informing problem, the trend toward self-sufficiency in that region may exacerbate the resource problem faced by U.S. researchers.

MIS researchers in Europe appear to be much more connected with the practitioner community and also derive funding for their research from a much wider range of external sources than their U.S. counterparts. In a 1996–1997 survey, Avgerou et al. (1999) noted that MIS researchers in Europe receive at least some of their research funding from the institution (55.8 percent), their national government (60.6 percent), industry (49.9 percent), consulting (39.9 percent), and the European Union (30.3 percent). Consulting and industry engagement are actively encouraged in European universities, sometimes even at the cost of journal articles (Lyytinen et al. 2007). Additionally, a significant proportion of European research tends to be entrenched and immersed in practice, and employs research methods that encourage practitioner involvement. For instance, the most highly cited reference in a study of European MIS research was Yin's (1989) seminal book on case research design (Galliers and Whitley 2007).

Researcher–practitioner collaboration is not only valued among European researchers, but also among European practitioners. German businesses, in particular, have a long history of rewarding research credentials held by their managers. By one estimate, a majority of senior executives in large German companies hold doctorates (Mintzberg 2004,

p. 179). The management education system in Germany is, however, quite different from that of the United States in that it builds upon a long tradition of combining engineering and business education (*Wirtschaft-Ingeniuere*) that originated in the 1920s (Locke 1985). MIS education programs in Germany generally take the form of business informatics (*Wirtschaftsinformatik*)—highly technical programs that are more closely aligned with design science (Hevner et al. 2004) than behavioral MIS. As an example, German MIS researchers contributed to the development of SAP enterprise resource planning software (Lyytinen 1999).

The conclusion that European MIS programs are better aligned with practice than U.S. programs is supported by an analysis of coauthorships of the *European Journal of Information Systems* (EJIS), similar to that undertaken for *MIS Quarterly* presented in Figure 1. During the 5 year period from 2002–2006, we examined 132 articles in EJIS (excluding editorials, book reviews, and one special issue—Vol. 14, No. 5—devoted entirely to reflections on the late Claudio Ciborra). Of these, 9 percent (12 articles) had industry or consulting coauthors (compared with 1.4 percent or 2 articles in *MIS Quarterly*, during the same period). Furthermore, of the 39 EJIS articles that had one or more U.S. coauthors, not a single practitioner coauthor was identified—consistent with our findings that U.S. academic researchers are not collaborating with practitioners in their research publishing efforts. Excluding the U.S. coauthored articles in EJIS, practitioner involvement is reflected in 13 percent of the remaining articles, a ratio not seen in the United States for nearly two decades. We also identified four articles, all originating in Scandinavia, where both a company and a university were listed for the same author. Such dual affiliation represents a particularly good opportunity for informing across the researcher–practitioner boundary.

While international MIS departments may be informing practitioners more effectively or face a less severe resource crisis than their U.S. counterparts, these same international departments are also facing increased pressure to Americanize their education and research programs (Pfeffer 2007, p. 1340). AACSB International, long responsible for accrediting U.S. business schools, now increasingly emphasizes its global accreditation activities. Its recent "impact" model (see Table 1), provides examples of what types of research impact should be targeted by different types of institutions. As one moves from Model A to D (left to right in Table 1), the importance of impacting practice declines as the importance of disciplinary research grows. Unfortunately, researcher prestige and salary grow correspondingly as one moves in the same direction—a strong incentive for moving toward internal-client informing. International researchers are also facing increasing pressures to adopt research publication counts as their principal measure of research productivity. In the United Kingdom, for example, important chunks of government funding are becoming directly attached to productivity measured in the form of journal publications (Powell and Woerndl 2008). The EJIS has published a number of articles that focus on developing just the right metric for counting publications (e.g., Galliers and Whitley 2007; Mingers and Harzing 2007). In Australia, Korea, and France, there are reports of business faculty being paid piece-work for publications in journals, with higher rates being paid for elite journals in some cases (Macdonald and Kam 2007, p. 644). Where strong individual incentives are in place for disciplinary research, it will be hard to resist the pressure to conform to the current paradigms for such research. Regrettably, the majority of the targeted journals originate from the United States and, as we have already observed, their paradigm does not emphasize practitioner informing. If European researchers are tempted to move away from their practice-informing activities in a quest for U.S.-style research publications, that does not bode well for the future of the European model of MIS research.

The Informing Challenge

In this section, we examine the underlying causes of the informing crisis facing the MIS discipline in the United States. Our analysis is structured into communication and dissemination barriers.

Communication Barriers

At the outset, we concede that informing practice is an extraordinary challenge. As noted earlier, the management discipline has wrestled with the problem of reaching practitioners for longer than MIS has existed and, by its own admission, has met with little success. Reorienting MIS researchers' thinking toward proactively considering practice-informing strategies and consciously enacting such strategies will be a major change management problem.

The key communication barrier hindering such informing is the diversity in knowledge-forms held by academic researchers and practitioners. Aristotle described two forms of knowledge—*episteme* (theory) and *phronesis* (practical wisdom) (Kessels and Korthagen 1996). The former can be viewed as a collection of symbolic rules and scripts that serve an individual across a wide array of tasks. The latter, on the other hand, is highly compiled and processed knowledge, acquired through practice and readily accessible for targeted,

Table 1. Impact of Mission Characteristics on Impact Expectations: Examples

Characteristic	Model A	Model B	Model C	Model D
Scholarship emphasis	Scholarship emphasizes learning and pedagogical research and contributions to practice	Scholarship emphasizes contributions to practice and learning and pedagogical research	Scholarship emphasizes contributions to practice and discipline-based scholarship	Scholarship emphasizes discipline-based research and contributions to practice
Doctoral program emphasis	No doctoral program		Doctoral program that emphasizes practice and/or places graduates in teaching-focused schools or industry	Large doctoral program placing graduates in research-focused schools
Weighting of impact: expectations	Teaching – Higher Practice – Moderate Theory – Lower	Practice – Higher Teaching – Moderate Theory – Lower	Practice – Higher Theory – Moderate Teaching – Lower	Theory – Higher Practice – Moderate Teaching – Lower

Excerpted from Table 2 (p. 31), AACSB, "Final Report of the AACSB International Impact of Research Task Force," AACSB International (http://www.aacsb.edu/resource_centers/research/Final/Impact_of_Research_Report-FINAL.pdf; accessed May 27, 2008).

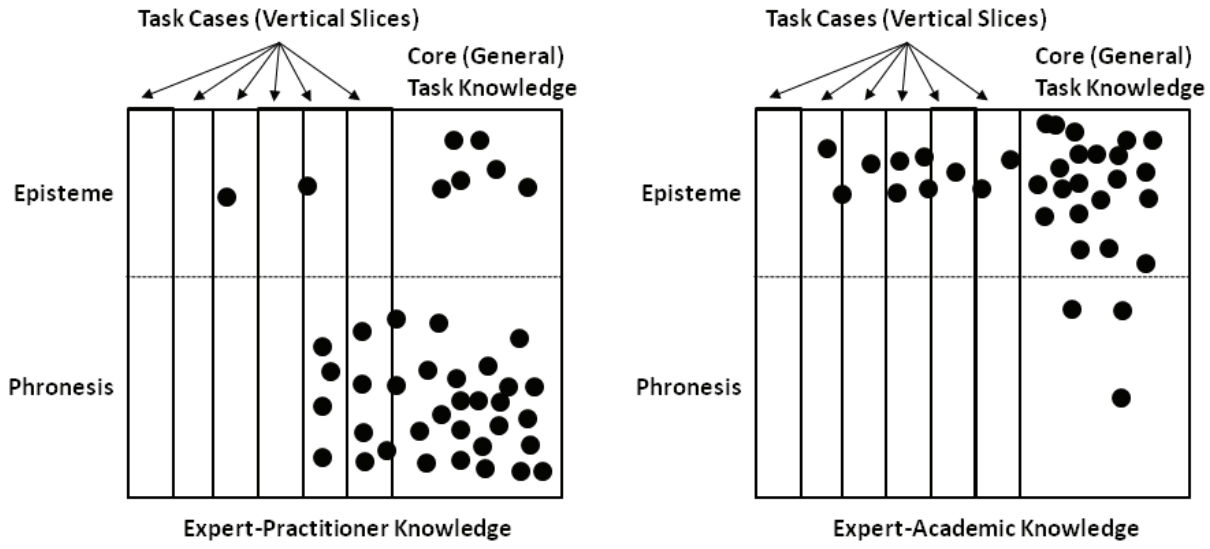

Figure 3. Illustration of Practitioner–Academic Expertise Differences

specific tasks but less generalizable across a range of diverse situations. The latter form of knowledge is what most cognitive scientists consider to be expertise—that which separates the performance of novices from experts in a task setting (Ericsson and Smith 1991). Practitioners have substantial phronesis knowledge in their areas of prior experience, while academic researchers tend to have more epistemic knowledge in the form of generalizable theories rather than specific solutions. Of course, academics have phronesis knowledge as well—but mainly in those areas where they routinely practice, such as teaching and the conduct of research. This distinction in domain expertise is illustrated in Figure 3, with the dots signifying the hypothetical density of knowledge elements for the two groups.

Additional communication barriers may exist due to the intrinsic differences between the MIS practice and research professions. Given decreasing technology cycles and short windows of opportunities, MIS practitioners have adapted to making quick decisions based on incomplete information; academic researchers have adapted to long review cycles, which emphasize the completeness and accuracy (rigor) of their work, by focusing on systematic study of enduring problems. Practitioner schemata are often unarticulated and derived from experience; researcher schemata tend to be explicit and symbolic in nature, often requiring elaborate explanations and supporting evidence. Researchers strive for a theory that can explain as many situations as possible, meaning the obvious must be incorporated as well as the unexpected; practitioners are motivated to acquire incremental knowledge, forsaking the obvious and prizing the unexpected. Thus, articles summarizing research are likely to include much information that practitioners do not view as useful. Indeed, stating or testing "obvious" ideas or "expected" findings explicitly may serve to undermine a researcher's credibility in the eyes of the practitioner.

The differing nature of expertise and motivations between the two communities hinders communication in both directions. Practitioners, seeking situation-specific and directly applicable phronesis knowledge, may instead find epistemic or theoretical knowledge from academic researchers that seems both trivial and divorced from their immediate business needs. Researchers, attempting to better understand practitioner concepts, soon discover that many practitioners can't explain how they reason—a challenge long recognized by knowledge engineers involved in the construction of expert systems (e.g., Waterman 1986). The technical–behavioral research dichotomy in MIS exacerbates this situation, further frustrating communications in both directions between conceptually focused behavioral researchers and technology-oriented practitioners. This gap in cognitive schema and communication language increases the mutual indifference of the two communities to each other's needs and activities.

Some of the challenges presented by the differing types of expertise are highlighted in Table 2, which employs the SUCCESs framework (Heath and Heath 2007) for establishing "sticky" communications, closely related to the term *resonance* used in the informing sciences (e.g., Gill and Bhattacherjee 2007). This framework consists of six characteristics that lead to impactful communications: simplicity, unexpectedness, concreteness, credibility, emotion, and stories. What the table illustrates is how differently each characteristic may be perceived from the perspective of a researcher, who is most likely to be focused on the quality of the research, and the practitioner, who is most likely to be interested in its direct application.

The communication barriers described in Table 2 can be partially overcome through appropriate tailoring of the research message. Stories can be used in place of statistical evidence, elaborate descriptions of research methods and tests can be omitted, concrete examples can be used to illustrate abstract ideas, and even a bit of passion can help practitioners better connect with academic research ideas. None of these, however, will erase the fundamental differences between episteme-based and phronesis-based knowledge held by these two communities.

Many of the barriers described can also be significantly reduced by familiarizing the sender (i.e., the researcher) with a particular practitioner's knowledge structures, cognitive schema, and communication patterns. This is, perhaps, the reason why consultants are so much more successful in influencing practice than academic researchers (e.g., Pfeffer 2007). Before investigating a practice problem, a consultant first attempts to find out as much as possible about the client's conception of the problem and existing knowledge. Doing so helps determine what needs to be communicated (and what does not), demonstrates respect for the client's knowledge pool, and establishes practical constraints on possible solutions. Consequently, the consultant maximizes the likelihood that proposed solutions will be feasible and understood, and that the informing process will have impact.

Dissemination Barriers

Even if MIS researchers were to think like practitioners, communicate in their language, and use publication outlets that they frequently read, it is far from certain that their impact on practice would be substantial. The field of management has attempted to employ such channels for decades, yet they still view their impact on practice as being far below what is desirable (e.g., Pfeffer 2007). In considering this issue, we draw upon the innovation diffusion framework described by Rogers (2003), based on his classic studies of agricultural innovations introduced to farmers by a quasi-academic organization (the U.S. Agricultural Extension Service). He observed that after a small percentage of early innovators adopted these advances as a result of academic efforts, nearly all subsequent adoptions resulted from word-of-mouth communications with other farmers, supported by demonstrations in the field. Subsequent research confirmed this pattern across a wide range of different innovations—once introduced by an outside agency, innovations tend to diffuse through social networks of individuals who are relatively homophilous in social characteristics, via a process of communication and social influence.

Table 2. Stickiness (Heath and Heath 2007) and How MIS Academic Research Is Perceived

Stickiness Characteristic	Research Criteria	Practitioner Criteria
Simplicity	Research employs and references an existing body of theory that is familiar to the researcher, making it instantly recognizable. Write-up is in the form of a familiar pattern.	MIS theory, on the behavior side, tends to be complex in structure owing to all the contingencies involved. Empirical analyses typically involve a whole range of complex tests that are unfamiliar to the practitioner. Researchers also tend to be very precise in their definitions and often—justifiably—find multiple meanings in terms that seem to be simple, such as success (e.g., characterized in seven ways; DeLone and McLean 2003). To the practitioner, who may have in mind a single definition—one that will, naturally, differ from practitioner to practitioner—it appears as if researchers are over-complicating the situation.
Unexpected	Research tests a hypothesis that has never been tested before, proposes a construct that has never been proposed before, or employs a novel method.	Analysis and conclusions seem to be dominated by findings that are immediately obvious to any practitioner. From the researcher's perspective, these are important to include because other researchers will not necessarily be familiar with the "basics" of the domain being studied. Also, rigor—defined in research terms—demands that even patently obvious relationships be tested.
Concreteness	Assessed in terms of the testability of the hypotheses and the degree to which theory provides unambiguous predictions.	Abstract theory discussions and highly qualified conclusions seem vague and insubstantial. Analyses that focus on the identification of latent influences (e.g., structural equation models) or underlying factors (e.g., factor analysis) seem particularly amorphous.
Credibility	Judged by the internal consistency of the article, the systematic nature of the review, and the appropriateness of the analyses. Researcher background is removed as an unfair influence through anonymous peer review.	Assessed based on researcher work experience and evidence of familiarity with the practitioner's specific domain, both of which may be relatively limited. Absent these, credibility is most likely to be assessed based on institutional affiliation, providing a considerable advantage to faculty at elite institutions. Credibility can be further damaged by common academic practices, such as testing assertions that appear to be obvious for the sake of rigor and allowing findings to age—sometimes well past their shelf life—in long review processes.
Emotion	Inappropriate.	Entirely absent.
Stories	The entire write-up represents a relevant story about conducting a research project; well-told, it will be highly resonant.	MIS researchers tend to avoid the use of anecdotes, the mainstay of practitioner magazines such as *Harvard Business Review* (e.g., Rynes et al. 2007, p. 999), since they can be used to substitute for rigor in drawing a conclusion and often appear wanting in objectivity.

These findings suggest that a productive strategy for addressing the academic–practitioner informing challenge would be to identify potential early innovators or opinion leaders (Rogers 2003), also called mavens (Gladwell 2000), and seed them with the desired knowledge. These practitioner–innovators then serve as the launching point for further diffusion of academic research across the broader practitioner community. Early innovators may be reached through appropriate publications or personal contacts (e.g., advisory board members of MIS departments), and they may need personalized attention to convert the epistemic research knowledge into phronesis knowledge relevant to their practice. Once that process is complete, our role, as academic researchers, becomes one of clarifying concepts and being available to address questions among later adopters. Such an approach would mean that we need to find ways of establishing close ties with innovative practitioners and to focus on informing practice one individual at a time, rather than as a collective whole. For such a paradigmatic change to occur, major changes will be required in the disciplinary informing system.

Recommendations

Absent an unanticipated sharp increase in enrollments, we will need alternative sources of resources if we are to survive as an independent discipline. The resource-rich practice community is the obvious place to start. Unfortunately, our current publication-oriented strategy is inconsistent with the innovation diffusion research just described, which strongly suggests that solutions will need to be constructed around building tight personal links between researchers and practitioners. Such practice-informing activities are little rewarded by the discipline today, at least in the United States. The recommendations that follow are each aimed at motivating an increased level of individual researcher engagement with practice. They are organized according to the informing science framework, with recommendations that relate to the design level, construction level, and instance level of the disciplinary system. For each recommendation, we also identify the agencies that may be responsible for their implementation.

Recommendation 1: Establish Discipline-Level Priorities for Engaging Practice

Our first recommendation focuses on the design level of the disciplinary informing system. Although the disciplinary system has undertaken numerous initiatives in the area of MIS curriculum redesign, we have few, if any, formal guidelines in place for prioritizing disciplinary research efforts. The lack of such strictures gives us enormous freedom in deciding what research to conduct, how to conduct it, and where to publish it. The lack of guidance has allowed our norms to drift away from informing external clients such as MIS practitioners.

First, to motivate MIS researchers to engage in practitioner informing activities, we need a design-level statement of what types of informing activities we value as a discipline, what types of informing activities we deem critical for the discipline's survival, and how such activities will be monitored and measured. Monitoring and measurement guidelines are particularly important to create accountability for practice-informing activities, and to recognize and reward the researchers who engage in such activities.

Although the emphasis of our analysis has been on U.S.-based MIS research, it would be critical that the design entity be truly global in its constituency. As previously mentioned, many non-U.S. programs have succeeded in building bridges to practice that U.S.-based programs can learn from, and researchers in these practitioner-engaged programs should take a leadership role in drafting a vision for the global MIS discipline. Hence, the right agency for implementing this recommendation is a global MIS body, such as the Association for Information Systems (AIS), and, more specifically, an AIS subcommittee drawing representatives from North America, Europe, and Asia-Pacific schools, at the very least.

Second, if we wish to successfully inform practice, we must engage with practice. If the discipline encourages practitioner engagement as a key priority, then informing activities that currently add little to a researcher's academic credentials at most institutions will rise in stature and serve to model future researcher behaviors. Among these are case writing, consulting, participation in service organizations (e.g., Rotary Club) and professional organizations (e.g., Society for Information Management), creating practitioner-sponsored research centers (e.g., MIT's Center for Information Systems Research) and researcher membership in corporate boards. Of course, there are some elite institutions that already encourage such activities, and are consequently rewarded with resources and endowments from practitioners. It is only reasonable that we learn from successful examples of the past and institutionalize such practices among the rest of the discipline.

Third, we need a forum to initiate the disciplinary level activities just described. One approach is to convene a special global symposium on the current challenges facing the MIS research discipline. The symposium can be organized by a major disciplinary organization—such as the AIS—and, ideally, should also have sponsorship from MIS professional organizations such as SIM. It will be attended by key representatives of prominent MIS journals, senior MIS faculty members from universities around the world, and a broad spectrum of practitioners. Such a symposium is not without precedent. In 1985, a similar symposium was convened in Boston titled "The Information Systems Research Challenge" (McFarlan 1985). Symposium participants concluded that the discipline was overly obsessed with technology and insufficiently concerned with organizational issues and, hence, asserted that the discipline's research priorities should be shifted toward the organizational problems facing MIS managers:

> Many practitioners voiced concerns that the research being done is too computer science oriented and not sufficiently focused on management….Strong pleas were made for more study of the management rather than the design or use of technology (McKenney 1985, p. 406).

Considering how MIS research has increasingly focused on organizational and behavioral issues since that time, it may be argued that this symposium influenced the future direction of

MIS research along the path that was advocated by the influential researchers attending the forum.

Encouraging practitioner involvement would serve as a key theme in our proposed symposium, and participants would likely brainstorm and explore alternative approaches for building bridges with practice. Some plausible initiatives that could be examined in this symposium are research collaborations with practice, technology training with practice, professional scholarships for MIS researchers, sabbaticals in practice, case writing activities, and industry consulting, as further described in Table 3. We would also need to explore how practitioners can benefit from such initiatives, in order to successfully "sell" these programs to the practice community.

One curriculum area, informing, could also be addressed specifically by the design-level body. If we believe that informing external clients is central to our disciplinary survival, then it would be reasonable to have a high-level statement that the study of informing should play a major role in MIS doctoral education. This would not simply be a course or series of courses on teaching. Instead, informing should be considered in all its forms—cognitive, philosophical, diffusion, and as augmented by the use of technology.

Recommendation 2: Encourage Hybrid Academic–Practitioner Doctoral Programs

This recommendation focuses on the construction level of the disciplinary system: the individual departments. To diffuse our research into the practice community, we should bring qualified practitioners into our doctoral programs with the express objective that they continue working in industry while simultaneously enrolling in doctoral programs. Such hybrid doctoral programs would allow practitioners to work with, and learn from, their academic colleagues. These practitioners would then become informing channels through which future research findings can pass to practice and, most importantly, build symbiotic relationships between the research and practice communities that can also help to generate resources for MIS programs. Furthermore, hybrid programs would not cannibalize traditional full-time doctoral programs, since we would not need to place these working practitioners after graduation. The appropriate agency for implementing such programs would be individual MIS departments that already have the infrastructure and faculty to operate traditional doctoral programs.

While professional MIS doctorates are uncommon in the United States at this time, such programs are common in many other professional areas, such as law, social work, medicine, education, architecture, and engineering, and even in some business disciplines such as economics and finance (Pfeffer and Fong 2002). Outside the United States, professional business doctoral programs appear to be gaining traction. In Australia, for example, 20 DBA programs have been initiated since 1993 (Fink 2006). In New Zealand, such programs have been motivated by the goal of bringing research and practice closer to each other (Lockart and Stablein 2002). In Germany, as previously noted, professional doctorates among top-level management may be the rule rather than the exception (Mintzberg 2004).

One example of an existing U.S.-based professional doctoral program in MIS is the Doctorate of Science in Information Systems program at Robert Morris University (Kohun and Ali 2005), an ABET accredited institution in Pennsylvania. This program, whose students mostly consist of experienced MIS practitioners, averages 15 students per annual cohort with a completion rate of 90 percent in 3 years (Ali and Kohun 2006). While conventional MIS doctoral programs are net consumers of resources, the Robert Morris University program—with an annual tuition of $25,000 per year—has been a positive net revenue generator and has also generated the highest annual per capita alumni giving of any program in the university. This program (summarized on their web site at http://www.robert-morris.edu/WEB/CMS/ACADEMICS/SCIS/Pages/default.aspx) blends MIS, management, informing, and research methods content. According to the program's director, approximately 60 percent of its graduates remain in industry and about 40 percent have used the program to acquire academic credentials.

One might be tempted to question the quality of graduates produced by professional MIS programs. If the sole objective of a doctoral program is to maximize the quantity and quality of academic publications produced by its graduates, then a program suitable for professionals may be inferior to a traditional doctoral program. If, however, a program has broader goals that include maximizing the long-term transfer of MIS research knowledge to practice, then it is hard to conceive of a better way to achieve such knowledge transfer than through collocating practitioners with academic researchers in the intense learning environment of a doctoral program and through seeding the practitioner community with terminally qualified individuals who can relate to, understand, and appreciate our research outcomes.

Recommendation 3: Develop Programs for Placing Researchers in Practice

Our third recommendation also focuses on the construction level of the MIS disciplinary system. Departments (and colleges) need to begin thinking creatively about ways to en-

Table 3. Opportunities for Practitioner Engagement

Activity	Comments
Research Collaborations	Businesses offer competitive research grants to faculty. An example of such a program was run by Citibank. John Reed, CEO of Citibank at the time, specifically identified the benefits of research that "creates a framework that allows practitioners to understand how to locate the specific business problems that we may be dealing with within a broader space" (Huff 2000, p. 58). This supports the view that some practitioners might be induced to participate in conceptual, as opposed to problem-specific research. A number of problem-specific research grant programs already exist (e.g., from Microsoft Research and Hewlett Packard's "Technology for Teaching" grants). Valuable as these are, they don't emphasize researcher and practitioner interaction.
Technology Training	Businesses fund practical training for faculty, side-by-side with practitioners. For example, Microsoft— as part of its Academic Alliance Program—used to fund a substantial number of faculty slots for the week-long TechEd workshop. The potential benefits to practitioners of supporting such intensive training programs is greater realism in subsequent classroom activities developed by the faculty members and the opportunity for greater practitioner–academic interaction during the training. These types of programs need to be distinguished from more directed training programs—such as those provided by SAP to university partners—that are tied to later use of a specific technology in the classroom, which serve a useful purpose but are already commonplace and are less oriented toward bridging the researcher–practitioner gap.
Professional Scholarships	Grants that provide employees the opportunity to acquire advanced academic credentials, either to increase the employee's value to the company or to provide the senior employee with the opportunity to transition to research academia—as opposed to pure teaching academia (the focus of AACSB International's Bridge Program, a week-long workshop for senior managers who want to become professionally qualified instructors). While company support for nonterminal employee education is common and some companies, most notably IBM with its "Transition to Teaching" program, fund employees for transitions to K-12 teaching, we do not know of any programs specifically aimed at encouraging the acquisition of research skills by senior practitioners. The potential benefits to companies of such programs are increased access to academic research and greater influence on its direction, as well as increased relevance of instruction received by the students of those professionals who migrate to academia.
Sabbaticals in Practice	The traditional academic sabbatical involves either visiting another institution—to absorb its culture and values—or focusing entirely on research. A third alternative, which would reduce the institution's need to supply resources, would be to establish programs wherein faculty members take compensated employment with businesses for a specified time period, such as a year, without the intention to leave academia. Such arrangements, very much consistent with management thought (e.g., Latham 2007; Rynes 2007), would create a suitable pathway for creation and diffusion of research likely to endure well beyond the employment period.
Case Writing	With very few exceptions—Harvard Business School cases being the obvious and most notable one— when a researcher or organization today undertakes the development of a teaching case, both sides tend to be suspicious. From the researcher's perspective, the resulting case is likely to add value comparable to blank space on an academic curriculm vitae. From the organization's side, a teaching case study may represent yet another opportunity for the company's legal department to become involved where they don't belong. Thus, when viewed in terms of the product, case writing seems like a low-value activity. When organizations view case participation in terms of the opportunity to build a long- term bridge with the researcher or researcher's institution—as it does in the case of HBS—then the equation changes dramatically. A teaching case can serve as the beachhead for later, richer research relationships that benefit both sides.
Consulting	Consulting relationships between researchers and organizations can provide numerous benefits. For the researcher, it offers the opportunity for problem solving and observable impact. For practitioners, it offers access to individuals who are likely to be very bright, objective, and starved for interesting problems on which to work. Here, the implementation problem is more likely to be on the side of the researcher than the organization—consulting somehow seems distinctly "unacademic." One way to change such a perception might be for MIS departments to become active intermediaries in setting up such relationships and, in exchange, receiving a substantial fraction of compensation—effectively making the consulting relationship a "grant" relationship.

courage faculty to participate in practice. Treating faculty consulting in a manner comparable to research grants would be one example—and, just as is the case for grants, departments and colleges can share in any resulting revenue to cover their overhead. Arranging sabbaticals in practice is another example. Here, once again, departments can acquire a share of the resources to offset the cost of sabbatical pay. Longer term leaves of absence may also be supported under some circumstances. While such arrangements are plausible even today, what we propose is that they be viewed as career-enhancing rather than career-inhibiting and that they should positively impact the promotion and tenure process.

There are many examples of these types of programs adding to informing effectiveness in other areas. In economics, for example, researchers from top institutions frequently move back and forth between government and academic positions. Law professors sometimes serve as clerks of courts, later returning to academia. Faculty members in the sciences frequently become involved in entrepreneurial startups inspired by their research while continuing in their academic employment. Furthermore, such policies are already in place at some of the most highly ranked institutions such as Harvard Business School.

If the goal of such placement activities were strictly a matter of revenue generation, then they would have no place in a research institution. If, however, we believe that our ability to inform practice effectively depends heavily on the strength of the linkages we form with individual practitioners, then such activities can and should be viewed as integral to the overall research process. Indeed, if our research is to have impact on practice, the steps we take to achieve resonance are just as important as those we take to ensure rigor and promote relevance.

Recommendation 4: Publish Practitioner-Focused Article Reviews in Elite Journals

Our fourth recommendation is aimed at MIS researchers, the editorial boards of elite disciplinary journals, and the MIS professional society (AIS). If our goal is to inform external clients, it is critical that we encourage MIS researchers to frame their research findings in a language and in outlets that will engage practitioners. This would include publication in practitioner-oriented journals such as *Communications of the ACM* and *IEEE Computer*, trade journals, and even popular news outlets such as *Business Week* and *The Wall Street Journal*. Although such publications will have little impact on the behavior of most practitioners, innovation diffusion theory suggests that mass media can be a valuable mechanism for communicating new ideas to early innovators (Rogers 2003, p. 211). Obviously, such research must be presented in a manner that is intelligible to these enthusiastic mavens.

Unfortunately, practitioner-oriented outlets are often perceived to be of lesser quality than research journals targeted at internal clients. Unless publications in external-client outlets are encouraged by MIS professional societies, such as AIS, and rewarded by university and college committees, few MIS researchers will have the incentive to devote the time and energy needed to tailor their research into a form suitable for such outlets. In other words, most researchers facing a choice between starting a new academic research project or taking existing research and reworking it to accommodate practitioners' needs will find that, from a purely professional standpoint, the new academic research project is a more rewarding option.

One way to incentivize researchers to publish in practitioner forums would be for elite MIS research journals to dedicate a section of each issue to publishing reviews of high quality, client-focused research published in practitioner and other non-MIS outlets. The purpose of these reviews would be to identify outstanding exemplars of externally targeted research and promising externally focused research streams. Just as more traditional MIS research publications are recognized for their theoretical or research contribution, these subfield reviews would recognize excellence in informing external clients. This process can also help "cross-pollinate" academic MIS researchers with ideas emanating from practice or other disciplines, which can only enrich future MIS research. Writing these reviews will, presumably, be the job of a panel that includes editors from the elite journals and subject-area journals, as well as external clients. Table 4 presents several prospective examples of publication and activity categories that may be considered for inclusion in this review section of top MIS journals.

Recommendation 5: Establish Targets for Practice-Focused Research Approaches

Our final recommendation is also directed at the informing instance level, individual researchers, as well as the design level, the elite MIS journals. By their very nature, certain types of research approaches, designs, and implementations (e.g., practitioner participation in research, action research, case studies, technology application or design research, multidisciplinary research) foster high levels of engagement with external clients. If elite MIS journals, holding considerable power in setting disciplinary agendas (e.g., Introna and Whittaker 2004), place a high priority on publishing research

Table 4. Research Areas for Reviews in Elite Journals

Research Area	Comments
Practitioner-focused articles	Noteworthy articles from selected practitioner journals. The list of targeted journals could also be published, thereby effectively establishing an "A-list" for researchers wishing to publish practitioner pieces; serves to reward researchers for informing activities channeled directly to external practitioner clients.
Book reviews	Books, including textbooks, written on subjects related to MIS; would encourage researchers to consider books as an outlet (an important channel to practitioner and student clients).
Informing with information technology	Research involving the use of information technology to inform clients from any discipline. Not only do many technology-in-education issues fall nicely within the types of areas that MIS has researched in the past (e.g., technology acceptance, group DSS), it also encourages researchers to collaborate with another external client: researchers from other disciplines.
Applied MIS	Research in which MIS concepts are applied in other disciplines, business-related and beyond. Encourages MIS researchers to enter into multidisciplinary collaborations and may also encourage researchers from outside the field to view MIS as an important subdiscipline.
Research and development	Research exploring the design and capabilities of cutting-edge technologies that may be applicable to MIS external clients. Encourages MIS researchers to include technology development and publishing time-sensitive reports of emerging technologies as part of their research program. These types of research can be quite beneficial to both practitioner clients, who may gain access to potentially beneficial technologies sooner, and student clients, who gain access to a more technologically sophisticated instructor.

involving such approaches, researchers in the field—particularly untenured junior faculty—will perceive less risk in designing research around such methods. *MIS Quarterly* has already demonstrated its willingness to publish and reward such research (e.g., the previously noted 2006 Best Paper). We must move further in that direction at the other leading journals in the discipline.

One way that journals could express such a commitment is through the establishment of portfolio targets (in percentage terms or in terms of number of articles published) for research employing specific methods that inherently promote external client engagement, particularly with practice. We believe that just making such targets explicit—regardless of how stringently they are enforced—and presenting their underlying rationale would serve as a strong motivator for such methods. Some examples of methods that might be targeted are presented in Table 5.

We emphasize that our recommendation involves methods, not appropriate research topics—the latter having already been debated within the discipline (e.g., Agarwal and Lucas 2005; Benbasat and Zmud 2003; Whinston and Geng 2004). Unfortunately, mastering a new research method requires a substantial investment of time during which productivity (as measured by prevailing disciplinary metrics) will decline and mistakes will occur. Knowing that a prestigious outlet has made publishing such research a high priority will weigh positively in the researcher's mind when contemplating whether or not to commit to new methods. Thus, targets will need to be relatively long standing; special issues encouraging approaches would not be sufficient, although they can be helpful in initiating the process. Once such client-engaging research activities are institutionalized and assume their place in the pantheon of MIS academic research, specific portfolio goals that target growth in particular research methods through artificial means can and should be abandoned.

Conclusions

Of the three challenges facing the MIS research discipline—resources, research, and informing—the informing challenge is the least understood. How we address that challenge has important implications for the way we conduct our research activities and acquire resources to sponsor our research activities. In this article, we described the informing challenge faced by U.S.-based MIS research institutions, explored the magnitude and scope of the problem by comparing it with global MIS programs and informing practices in other disciplines, identified two barriers to our informing (communication and dissemination), and, finally, presented a set of five recommendations to improve the effectiveness of our future informing activities.

At the present time, nearly all extrinsic incentives for MIS research are aligned with informing internal clients. In the

Table 5. Research Methods Encouraging Researcher–External Client Interaction

Research Method	Comments
Qualitative case method research (first hand)	Research in which extensive first hand observations are made at a single or small number of sites; promotes the goal of increasing the discipline's visibility to external clients.
Disciplinary/external client collaborative research	Research in which both external clients and disciplinary researchers are involved in data gathering, analysis, and write up; promotes better channels between discipline and external clients and fosters disciplinary awareness of the issues that external clients deem particularly relevant.
Action research	Research in which the researcher actively participates in the situation being investigated; promotes greater integration between researchers and external clients.
Collaborative technology/ design research	Research where a particular technology or design is introduced, perhaps developed or prototyped by the researcher in conjunction with the practitioner community. By placing a greater emphasis on design research, we also help address the technical–behavioral dichotomy that impacts the degree to which the material that we teach does not align with the subjects that we research.
Impact research	Until we develop effective ways of assessing the impact of our research on practice and in the classroom, there is little chance that impact will weigh heavily on our assessment of research. While numerous articles have been published regarding the appropriate areas for MIS research, there is relatively little research on the degree to which MIS research has ultimately impacted external client communities. Some researchers (e.g., Lyytinen 1999) have suggested that it may be greater than we acknowledge; findings in this area would help MIS researchers better understand appropriate channels for informing external clients of all types. Even in the United States, it is also quite possible that our impact is greater than we currently assume (there seems little danger that it would be worse—judging from the examples presented in the AACSB International research impact report), in which case such evidence could be used to support the value of the discipline to our institutional partners.

face of student enrollment declines, this alignment has placed us in a precarious position with respect to resources; it may ultimately threaten our independence as a research discipline. Although MIS is not the only business discipline facing an informing crisis, our resource vulnerability makes it imperative that we be more proactive than other disciplines in addressing the crisis. In doing so, we may become the model for other business disciplines to follow. We hope that the analysis and recommendations presented in this paper will start a serious dialog among MIS scholars relating to our informing practices, one that will help us think creatively and constructively about solving our informing crisis.

References

AACSB. 2008. "Final Report of the AACSB International Impact of Research Task Force," AACSB International (available at http://www.aacsb.edu/resource_centers/research/Final/Impact_of_Research_Report-FINAL.PDF; accessed May 27, 2008).

Ali, A., and Kohun, F.. 2006. "Dealing with Isolation Feelings in IS Doctoral Programs," *International Journal of Doctoral Studies* (1), pp. 21-33.

Agarwal, R., and Lucas, H. C. 2005. "The Information Systems Identity Crisis: Focusing on High-Visibility and High-Impact Research," *MIS Quarterly* (29:3), pp. 381-395.

Avgerou, C., Siemer, J., and Bjørn-Andersen, N. 1999. "The Academic Field of Information Systems in Europe," *European Journal of Information Systems* (8:1), pp. 136-153.

Barley, S. R., Meyer, G. W., and Gash, D. C. 1988. "Cultures of Culture: Academics, Practitioners and the Pragmatics of Normative Control," *Administrative Science Quarterly* (33:1), pp. 24-60.

Barman, S., Buckley, M. R., and DeVaughn, W. L. A. 1997. "Pedagogical Concerns in Business Education: The Case of Management Science," *SAM Advanced Management Journal* (62:1), pp. 28-34.

Baskerville, R., and Myers, M. 2002. "Information Systems as a Reference Discipline," *MIS Quarterly* (26:1), pp. 1-14.

Benbasat, I., and Zmud, R. W. 1999. "Empirical Research in Information Systems: The Practice of Relevance," *MIS Quarterly* (23:1), pp. 3-16.

Benbasat, I., and Zmud, R.W. 2003. "The Identity Crisis Within the IS Discipline: Defining and Communicating the Discipline's Core Properties," *MIS Quarterly* (27:2), pp. 183-194.

Chau, P. Y. K, Huang, L., and Liang, T. P. 2005. "Information Systems Research in the Asia Pacific Region," *European Journal of Information Systems* (14), pp. 317-323.

Cohen, E. 1999. "Reconceptualizing Information Systems as a Field of the Transdiscipline Informing Science: From Ugly Duckling to Swan," *Journal of Computing and Information Technology* (7:3), pp. 213-219

DeLone, W. H., and McLean, E. R. 2003. "The DeLone and McLean Model of Information Systems Success: A Ten-Year

Update," *Journal of Management Information Systems* (19:4), pp. 9-30.

Dennis, A., Trieschmann, J., Northcraft, G., and Niemi Jr., A. 2002. "Business School Research Performance: An Update," unpublished paper, Kelley School of Business, Indiana University (available at http://www.kelley.iu.edu/ardennis/rankings/rank2001.doc; accessed November 15, 2006).

Ericsson, K. A., and Smith, J. 1991. "Prospects and Limits of the Empirical Study of Expertise: An Introduction," in T*owards a General Theory of Expertise*, K. A. Ericsson and J. Smith (eds.) Cambridge, UK: Cambridge University Press, 1-38.

Fink, D. 2006. "The Professional Doctorate: Its Relativity to the Ph.D. and Relevance for the Knowledge Economy," *International Journal of Doctoral Studies* (1), pp. 35-44.

Galliers, R. D., and Whitley, E. A. 2007. "Vive les Differences? Developing a Profile of European Information Systems Research as a Basis for International Comparisons," *European Journal of Information Systems* (16:1), pp. 20-35.

George, J. F., Valacich, J. S., and Valor, J. 2004. "Does Information Systems Still Matter: Lessons for a Maturing Discipline," in *Proceedings of the 25th International Conference on Information Systems*, R. Agarwal, L. Kirsch, and J. I. DeGross (eds.), Washington, DC, pp. 1039-1048.

Ghoshal, S. 2005. "Bad Management Theories Are Destroying Good Management Practices," *Academy of Management Learning & Education* (4:1), pp. 75-91.

Gill, T. G. 2001. "What's an MIS Paper Worth? (An Exploratory Analysis)," *Database for Advances in Information Systems* (32:2), pp. 14-33.

Gill, T. G., and Bhattacherjee, A. 2007. "The Informing Sciences at a Crossroads: The Role of the Client," *Informing Science* (10), pp. 17-39.

Gill, T. G., and Hu, Q. 1998. "Information Systems Education in the USA," *Education and Information Technologies* (3), pp. 119-136

Gladwell, M. 2000. *The Tipping Point: How Little Things Can Make a Big Difference*, New York: Little-Brown & Company.

Graddol, D. 2006. *English Next*, British Council (available at http://www.britishcouncil.org/learning-research-english-next.pdf; accessed August 8, 2008).

Heath, C., and Heath, D. 2007. *Made To Stick: Why Some Ideas Survive and Others Die,* New York: Random House.

Hevner, A., March, S., Park, J., and Ram, S. 2004. "Design Science in Information Systems Research." *MIS Quarterly* (28:1), 2004, pp. 75-105.

Huff, A. S. 2000. "Citigroup's John Reed and Stanford's James March on Management Research and Practice," *Academy of Management Executive* (14:1), pp. 52-64.

Introna, L., and Whittaker, L. 2004. "Truth, Journals and Politics," in *Information Systems Research: Relevant Theory and Informed Practice Series*, B. Kaplan, D. P. Truex, D. Wastell, A. T. Wood-Harper, and J. I. DeGross (eds.), Boston: Kluwer Academic Publishers, pp. 103-120.

Ji, S., Min, Q., and Han, W. 2007. "Information Systems Research in China: An Empirical Study," *Journal of Global Information Management* (15:1), pp. 1-17.

Kessels, J. P. A., and Korthagen, F. A. J. 1996. "The Relationship Between Theory and Practice: Back to Classics," *Educational Researcher* (25:3), pp. 17-22.

Kohun, F., and Ali, A. 2005. "A Doctorate Degree Program in Information Systems of a Kind,"in *Issues in Informing Science and Information Technology*, E. B. Cohen (ed.), pp. 179-188.

Latham, G. P. 2007. "A Speculative Perspective on the Transfer of Behavioral Science Findings to the Workplace: 'The Times They Are A-Changin'," *Academy of Management Journal* (50:5), pp. 1027-1032.

Lockart, J. C., and Stablein, R. E. 2002. "Spanning the Academy–Practice Divide with Doctoral Education in Business," *Higher Education Research & Development* (21:2), pp. 191-202.

Locke, R. R. 1985. "Business Education in Germany: Past Systems and Current Practice," *Business History Review* (59:2), pp. 232-253.

Lyytinen, K. 1999. "Empirical Research in Information Systems: On the Relevance of Practice in Thinking of IS Research," *MIS Quarterly* (23:1), pp. 25-28.

Lyytinen, K., Baskerville, R., Iivari, J., and Te'eni, D. 2007. "Why the Old World Cannot Publish? Overcoming Challenges in Publishing High-Impact IS Research," *European Journal of Information Systems* (16:4), pp. 317-326.

Macdonald, S., and Kam, J. 2007. "Ring a Ring o' Roses: Quality Journals and Gamesmanship in Management Studies," *Journal of Management Studies* (44:4), pp. 640-655.

Maher, M. W. 1995. "The Evolution of Management Accounting Research," *Management Accounting* (76:11), p. 72.

Markus, M. L., Steinfield, C. W., Wigand, R. T., and Minton, G. 2006. "Industry-Wide Information Systems Standardization as Collective Action: The Case of the U.S. Residential Mortgage Industry," *MIS Quarterly* (30:5), pp. 439-465.

McKenney, J. L. 1985. "Conclusion to Part V," in *The Information Systems Research Challenge: Proceedings,* F. W. McFarlan (ed.), Boston: Harvard Business School Press, pp. 403-410.

McFarlan, F. W. (ed.). 1985. *The Information Systems Research Challenge: Proceedings*, Boston: Harvard Business School Press.

Mingers, J., and Harzing A. W. 2007. "Ranking Journals in Business and Management: A Statistical Analysis of the Harzing Data Set," *European Journal of Information Systems* (16:4), pp. 303-316.

Mintzberg, H. 2004. *Managers, Not MBAs*, San Francisco: Berrett Koehler Publishers.

Naidoo, V. 2007. "Declining Foreign Enrollment at Higher Education Institutions in the United States: A Research Note," *Journal of Studies in International Education* (11:2), pp. 215-226.

Pfeffer, J. 2007. "A Modest Proposal: How We Might Change the Process and Product of Managerial Research," *Academy of Management Journal* (50:6), pp. 1334-1345.

Pfeffer, J., and Fong, C. 2002. "The End of Business Schools? Less Success Than Meets the Eye," *Academy of Management Learning & Education* (1:1), pp. 78-95.

Powell, P., and Woerndl, M. 2008. "Time to Stop Researching the Important Things?," *European Journal of Information Systems* (17:2), pp. 174-179.

Rogers, E. M. 2003. *Diffusion of Innovations* (5th ed.), New York: Free Press.

Rynes, S. L. 2007. "Let's Create a Tipping Point: What Academics and Practitioners Can Do, Alone and Together," *Academy of Management Journal* (50:5), pp. 1046-1055.

Rynes, S. L., Giluk, T. L., and Brown, K. G. 2007. "The Very Separate Worlds of Academic and Practitioner Periodicals in Human Resource Management: Implications for Evidence-Based Management," *Academy of Management Journal* (50:5), pp. 987-1008.

Shannon, C. E., and Weaver, W. 1949. *The Mathematical Theory of Communications*, Urbana, IL: University of Illinois Press.

Shore, B., and Briggs, W. 2007. "Competitive Analysis of MIS in the MBA Core: Are Trends Putting Pressure on the MIS Course?," *Journal of IS Education* (18:1), pp. 63-68.

Tapp, A. 2004. "A Call to Arms for Applied Marketing Academics," *Marketing Intelligence & Planning* (22:5), pp. 579-590.

Wade, M., Biehl, M., and Kim, H. 2006. "Information Systems Is Not a Reference Discipline (And What We Can Do About It)," *Journal of the Association for Information Systems* (7:5), pp. 247-269.

Waterman, D. A. 1986. *A Guide to Expert Systems*, Reading, MA: Addison-Wesley.

Whinston, A. B., and Geng, X. 2004. "Operationalizing the Essential Role of the Information Technology Artifact in Information Systems Research: Gray Area, Pitfalls, and the Importance of Strategic Ambiguity," *MIS Quarterly* (28:2), pp. 149-159.

Yin R. K. 1989. *Case Study Research: Design and Methods*, Newbury Park, CA: Sage Publications.

About the Authors

Grandon Gill is an associate professor in the Information Systems and Decision Sciences Department at the University of South Florida. He holds a doctorate in Management Information Systems from Harvard Business School, where he also received his MBA. His principal research areas are the impacts of complexity on decision-making, informing, and IS education. He has published many articles describing how technologies and innovative pedagogies can be combined to increase the effectiveness of teaching across a broad range of IS topics. His other publications include numerous case studies, a programming textbook, and MIS research articles in a wide cross section of journals, including *MIS Quarterly*. Currently, he serves as an editor of *Journal of IT Education* and an associate editor for *Decision Science Journal of Innovative Education*.

Anol Bhattacherjee is a tenured professor of information systems and the Citigroup/Hidden River Fellow at the College of Business, University of South Florida. He received his Ph.D. and MBA degrees from the University of Houston and has prior M.S. and B.S. degrees from the Indian Institute of Technology, India. His research interests include post-adoptive usage of information technology, knowledge creation/transfer in social networks, and medical informatics. Anol has published over 40 refereed journal articles that have received over 700 citations in Google Scholar, including two papers cited over 200 times each. His research has been published in *MIS Quarterly* (four times), *Information Systems Research*, *Journal of MIS* (four times), *Decision Sciences*, *European Journal of Information Systems*, *Decision Support Systems*, *IEEE Transactions*, and *Data Base, and Information & Management*, among other journals. Anol has also served on the editorial board of *MIS Quarterly* for four years.