

# Education for Information Management: Competition or Cooperation?

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## Introduction

EDUCATION FOR INFORMATION MANAGEMENT falls logically into the domains of education for library and information science and of education for business and management. This introduces problems and opportunities, the potential both for competition and for symbiosis and cooperation. It is logical then that the two communities plan the development of this educational process, if not jointly, at least with an awareness of what the other is doing and planning. This article is directed primarily to the library and information science education community in an attempt to report on and analyze the development of programs of education specifically for information management in graduate schools of business and management. The central questions that drove the creation of this article are:

1. What lessons can be learned from examining information management programs in graduate schools of business?
2. What opportunities for cooperation are there?
3. What likely scenario may unfold?

Now is perhaps a particularly appropriate time to examine the development of information management education in graduate schools of business and management (GSB). For a number of reasons, GSB education for information management is at a transition point,

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about to embark on a path that will direct it squarely into the domain that graduate schools of library and information science (GSI) have regarded as their own.

### External Information

Until relatively recently information management in the GSB context meant the processing of data generated by the organization—typically the generation of reports based on the aggregation, summation, and analysis of transaction data. The term *MIS* (*Management Information System*) was coined to describe such operations. Viewing early MIS systems in retrospect, one is reminded of the description of the Holy Roman Empire as neither holy, nor Roman, nor an empire. For a number of reasons, MIS systems were perceived as having been oversold. What has come to be recognized as chief among these reasons was the failure to recognize that aggregated internal data are of only minor importance in the decisions made by senior management. In the higher organizational reaches, decisions become strategic rather than tactical. The importance of external information—i.e., environmental or contextual information—becomes greater, and the importance of data generated by or captured with the organization's own routine operations lessens. Interestingly, this most basic failing of the MIS concept was the last to be recognized. It is, for example, conspicuous by its absence in Ackoff's classic 1971 litany of MIS misperceptions and shortcomings, "Management Misinformation Systems."<sup>1</sup> Although elucidating the failings of MIS systems and the MIS concept has been fair sport for a decade and a half,<sup>2</sup> it is only in the last few years that the perception of the failure of MISs to incorporate external data has been perceived as a major failing, indeed as the major failing.

However, that perception of the centrality of external information has now, at least in some circles, arrived with a vengeance. Perhaps the most dramatic bellweather of the new perception is IBM's articulation of "Enterprise Analysis," which is indeed sometimes referred to as "Information Enterprise Analysis." For some years, IBM has been promoting a methodology called *Business Systems Planning* (*BSP*) to help corporate data processing managers forecast and plan their needs more adequately. IBM's interest in better planning is not entirely altruistic—if managers plan better and anticipate needs sooner they will budget more accurately and more generously and IBM can sell its products sooner. In 1982, IBM totally reworked its *BSP* methodology, and gave it a new name and a new conceptual structure.<sup>3</sup> The new name

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was *Enterprise Analysis*, and the new structure was elegantly simple, and it elegantly bespoke the centrality of information in the management of an organization. The structure of the newly defined Enterprise Analysis consisted of three steps:

1. Decide what the enterprise is (What is it that the organization does, is it a railroad company, or is it a transportation company?).
2. Decide what decisions have to be made correctly to be successful in that enterprise.
3. Decide what information is needed to make those decisions correctly.

The structure of Enterprise Analysis owes much to the "critical success factors" approach to management of Rockart and others.<sup>4</sup> Indeed, Enterprise Analysis is in effect a statement that a very critical success factor in management is the access to appropriate information, and by linking that critical information not to routine operations but to the organization's critical strategic decisions, the appropriate information is inevitably primarily external.

This recognition of the centrality of information—external information in particular—to successful management inevitably leads GSB education into what has been the domain of GSI. Heretofore, MIS programs concerned themselves only with the organization's internal information. External information, at least as it was handled in any systematic sense, was the domain of the library. New Decision Support Systems (DSSs), as modern MISs are dubbed (a major marketing precept being that if a product bombs, give it a new name and rerelease it), are increasingly focusing upon the inclusion of and access to external information.

In addition to a not untypical lag between practice and professional education, there is also a pedagogical reason for the persistence in GSBs of the MIS emphasis upon internal rather than external information. That reason lies in the dynamics of academic prestige and the preference for publishable work of a quantitative nature. The output data generated by a conventional MIS system typically are quantifiable, and the numerous transaction data can be aggregated and manipulated, thus providing the basis for a suitably mathematics- or operations-research-oriented paper. Whether that paper is likely to be of any real utility is another question. The information used in real-world managerial decisions is apt to be external data of a primarily qualitative nature; or at best it is quantitative data used in a situation of such complexity and interleaved with so much qualitative information that no operations research style or mathematical analysis is feasible, and relatively little academic credit can be derived from working with the information. As

corporations pay more explicit attention to external data, however, GSB faculty will have to follow suit, despite the greater accessibility and manipulability of internal data.

### **Competitive Advantage**

Another major theme that has appeared in business literature and in business thinking is that information technology and information services can be much more than just better and more efficient ways of conducting "back room" operations. Information technology can be a mechanism by which to obtain a significant competitive advantage. The competitive advantage of information technology has been the theme of several recent articles in such bellweather journals as the *Harvard Business Review* and the *Sloan Management Review*.<sup>5</sup>

Information technology, the thesis goes, changes how companies compete. Information technology allows differentiation by product configuration, by customer service, and by the elimination of transaction and friction costs. Any or all of those effects change the nature of competition and tend to bind purchasers to the supplier offering them. Needless to say, when a technology changes the nature of competition, that technology is rapidly perceived to warrant strategic top-level attention.

### **Stage III of Information Systems Development**

Another theme that is emerging is that information technology itself is undergoing a major change. The idea is that information technology is capable of transforming the very structure of organizations. Perhaps the most compelling variant of this theme is that an examination of the structural components of information systems, computation, storage, and communication, leads to three distinct phases in the growth of computer-based information systems. In stage I, prior to 1917 operational information systems technology was characterized by Moore's Law of exponential growth (doubling periods of one to two years) of computational capabilities. In Stage II, from approximately 1971 to the 1980s or 1990s, operational information system technology has been characterized by Moore's Law growth of computational and storage capacity. In Stage III, beginning in the late 1980s or early 1990s, operational information systems technology will be characterized by Moore's Law of growth in all three components—computation, storage, and communication. The ramifications of this process of development, it is argued, are that while Stage I and Stage II information

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systems technology have changed intracompany and on-site applications, Stage III technology will change the structure of both intracompany operations and intercompany operations—changing, among other things, where operations are conducted. These changes will require top management's attention to information systems in a fashion quite unlike that required before.<sup>6</sup>

### **Convergence and the Archipelago**

The convergence phenomenon of information technology is another theme that has captured the attention of the business community. What have been organizationally distinct functions increasingly are perceived as needing integrated management. The "islands" in the "archipelago" report to distinct parts of the organization—e.g., data processing to finance, telecommunications to administrative services, the library to research and development. The integration of those islands therefore will require either major organizational change or complex cross-organization managerial structures. In either case, the solutions—as McFarlan and company have pointed out—will demand top-management attention.<sup>7</sup>

A final and little-enunciated point is that information services are becoming too large a component of an organization's operations to be regarded as minor overhead operations. As information functions become a larger slice of the pie, they may demand more management attention. What these themes have in common is that information or information systems management will increasingly become a strategic-level concern of top management. Business schools will react and indeed are reacting to these trends.

### **Study Methodology**

As background to this article, the author conducted a telephone survey among GSB faculty members whose specialty was in the information systems area (typically referred to as Management Information Systems in GSBs). The survey was not intended to reflect a representative population of GSBs. Rather it was conducted among GSB faculty at institutions which seem to be trendsetters and opinion leaders for education relating to information systems and information management in particular and for graduate business and management education in general.

The survey discussions addressed these principal questions: What was being done at present at that GSB in the way of education for information management? What developments or scenarios for the development of education for information management did the respondent perceive as likely? What relationships with GSIs were there, and what relationships were likely to develop?

## Findings

What emerges from the survey of GSB information management faculty is that GSBs have not arrived at a consensus of what GSB education for information management should consist of and how it should be implemented. Virtually every GSB has an area of concentration in information management, usually still referred to as MIS. In individual course titles, however, MIS is being supplanted by DSS. One can characterize decision support systems as being enhanced management information systems that: (1) allow interactive manipulation of the data, (2) provide "what if" and modeling capabilities, and (3) provide contextual (external) data as well as internal data. GSB education on decision support systems appears to have focused primarily on points one and two and to have given little attention to point three.

The GSB response to the increasing scope of information management less often has been broadening the scope of information management offerings and concentrations in MIS, and more often has been initiating some new program separate and distinct from the MIS area of concentration. The new programs seem to be of two types—broad, exploratory programs and communications-specific (i.e., technology-specific) programs.

New programs at MIT, Harvard, and the University of South Carolina are perhaps the most visible examples of the broad exploratory approach. At the Sloan School of Management at MIT a research program to examine the current and potential impact of information technology on organizations and upon management practices has been launched with the support of ten institutional sponsors—primarily large Fortune 500 American corporations, but also ICL (International Computer Ltd.) from Great Britain and the Internal Revenue Service. The sponsors not only provide funding but also provide research sites and data. At the Harvard Business School a program funded with IBM support has been announced and its goal is providing GSBs with faculty members with expertise in information systems and information technology. The program will support doctoral fellowships in information

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systems, and—a greater innovation—it will support a year-long study program at Harvard to prepare experienced professionals—typically engineers—for a second career teaching information management in GSBs. An important by-product of the program will be the research conducted by doctoral students and by the second-career teachers who will be expected to build upon their career experiences and their studies to produce a publishable research article during their year in residence. At the Graduate School of Business at the University of South Carolina, Don Marchand has established an Institute of Information Management which has been very successful in obtaining grants to analyze and undertake research on information management—especially research on state and federal government activities.

In other schools, more narrowly focused programs center on telecommunications and the communications industry. The Graduate School of Business at Columbia, for example, is developing a concentration in information management, but it is clearly perceiving the target, at least for the moment, to be media and the telecommunications industry. At NYU, which has a technology-oriented MIS program, the GSB has supported the development of a certificate program in telecommunications management offered by the School of Continuing Education. The program emphasis is on technology and regulatory issues.

Most of the programs just described are to a large extent the result of the initiative of one or a handful of faculty members at the respective institutions. Michael Scott-Morton at MIT, Warren McFarland and James McKenney at Harvard, Don Marchand at South Carolina, and Eli Noam at Columbia are examples. Another factor that the GSB programs—both the MIS programs and the newer more innovative programs—tend to share is an emphasis on the technology and the carrier rather than on the information carried. Generally, the GSB community fails to recognize that the heart of an information system is the information itself, not the mechanism by which it is conveyed. In short, the information industry is perceived by GSB faculty to consist primarily of the media and the telecommunications industry. The role of information creators and the role of those who add value to information—e.g., the online vendors—is as yet only very incompletely recognized.

Although the GSBs lag behind industry in developing a strategy for incorporating information management in their programs, the realities of the marketplace will impel GSBs to offer management information programs. Using Rogers and Shoemaker's typology of innovation,<sup>8</sup> GSB education for information management seems to be moving from having been championed by the early adaptors to being accepted by the

early majority. What are now special programs in information management will become more common, more heavily supported, more institutionalized, and these programs will subsume, merge with, or be subsumed within an enlarged and renamed MIS area of concentration.

### **Existing Links in Information Management Education**

Cooperative programs between GSBs and GSIs can be viewed two ways. One can regard librarianship as a distinct profession which needs a core of managers who are also members of the profession. The logical model for this view is the dual degree—e.g., MBA and LLB/JD. This model is in fact relatively uncommon. The University of Chicago has such a program, but it has not been very popular in terms of enrollment. The far more common situation is for a GSB to have dual-degree programs with other professional schools, particularly law, medicine, and engineering, and, conspicuous by its absence, a dual-degree program with the GSI. The absence of dual MBA and MLS programs does not appear to have been a result of any overt discrimination *per se*, but more a result of subtle discrimination and inertia. GSBs have sought dual degree programs with professional schools they perceived to have status equal or superior to their own—e.g., law and medicine—and have been quite content to be sought out by schools or departments they perceived as being of lower status, such as librarianship or education. GSIs for their part seem to have been reluctant to make the overture. One of the major reasons has been the perception that the expected earnings in the library field do not warrant the student's additional investment in the two-year MBA and the conclusion that students are not likely to choose the option and well may be advised not to. Experience of the University of Chicago with its joint program may lend some support to the former argument. Another reason has been financial and self-preservative. If the MBA is promoted as being of importance and if the student perceives finances dictating an either/or option, it may well be the more generally applicable MBA that leaves more options open that is chosen—to the loss of the GSI. Another facet of that financial concern is that GSIs have been fearful that under a "balance of payments system" (an accounting system whereby if a student registering in and paying tuition to school or department A takes a course in school or department B, then funds or accounting credits flow from A to B), they have more to lose than to gain by such an arrangement. This concern is certainly not without merit. It is perhaps not entirely coincidental that the University of Chicago is one university that eschews a balance of payments policy. A related concern—seldom mentioned but nonetheless real—is that

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dual-degree programs may reduce the MLS degree to a journeyman degree—the low road—with the MBA, either in combination or even worse, alone, emerging as the high road.

The second light is to view GSBs and GSIs as educating for what are increasingly overlapping and converging domains. Here the logical models are either competition with an attempt to preempt the domain, or cooperation, ranging from cross-listing courses to jointly administered and jointly awarded degrees. Overt competition at least is relatively uncommon. Robert Taylor, dean emeritus of the Syracuse University School of Information Studies, remarked in 1983 that if the school had not previously done so and were in 1983 to attempt a degree program in Information Resource Management, it would have to be done over the dead body of the business school.<sup>9</sup> Almost equally rare, however, are such basic measures of cooperation as the cross-listing of courses. Where cross-listing is done, it tends to be in the state-supported institutions where tuition income and therefore balance of payments concerns are less important, such as at UCLA and the University of California at Berkeley. More integrated mechanisms of cooperation such as joint appointments and jointly administered degree programs seem not to have evolved as yet.

### **Graduate and Undergraduate Education—A Parallel?**

Business and management education can provide a parallel to library and information management at this particular time in GSI development. After struggling for decades to install library education as a graduate program only, and after a decade and a half of reduced enrollment following the high-water mark in the late 1960s, GSI educators now perceive undergraduate education for information management as an opportunity to be plucked. For many years, business education has been offered at both the undergraduate and graduate levels. Like GSI education, business professional education suffers from the problem that—unlike disciplines such as chemistry or electrical engineering—there may not be enough content to offer an incremental bachelor's, master's, and doctoral sequence. The business and management education solution to avoiding duplication between undergraduate and graduate education is generally to discourage students from pursuing both degrees. Business education—without any centralized planning process—has evolved what is essentially a two-track solution. A student either pursues an undergraduate degree in business, or a graduate degree, but seldom both. Many of the prestigious MBA programs are housed in universities, typically private, that deliberately do

not offer an undergraduate degree in business. Many such MBA programs discourage applicants who have pursued an undergraduate degree in business, though many find economics quite an acceptable undergraduate major. Students who pursue an undergraduate degree in business do so knowing that if they have not actually forfeited their chances for an MBA, they have substantially diminished their chances of admission to a prestigious MBA program. The two-tier structure avoids the problem of teaching the same students the same material twice at two different levels.

The ramification of the GSB solution is that the more highly ranked the GSB is, the less likely it is to be interested in undergraduate business education. The more highly rated GSBs can afford—academically and financially—such a posture. A not unrelated point is that the more highly rated GSBs tend to look askance at undergraduate education that smacks of the vocational. Involvement in undergraduate professional education at those institutions would either carry a penalty or it would have to be very carefully and delicately constructed, implemented very gingerly, and offered on a very limited scale.

GSI by contrast, are approaching the issue of undergraduate education more from fiscal adversity rather than financial success. There is a legitimate question whether librarianship and information management are professions and GSIs are professional schools, or whether information science is an academic discipline. The real question of course is, What is the mix and interrelationship between profession and discipline? The field has been wrestling with the question since the last century and probably will be in the next. The more disciplinary and less professional the mix, the less relevant is the model of the development of business education; the more professional the mix, the more relevant is the model.

A second distinction is the question of scale. The business education solution is in effect one of specialization. Undergraduate business education programs teach journeymen and GSBs teach those who will be the more senior managers. Ten years after graduation from either program the distinction may be blurred. Specialization is feasible and practical when the enterprise is large, as in the case of business education. In “traditional” GSI education, the domain has been much smaller, and at least partially as a consequence, the approach has been that “one size fits all.” The one-size approach inevitably entails a compromise between education for the journeyman and education for the manager. In the GSI literature, discussion of how this compromise has failed has usually been couched in two related and overlapping issues, that of education for entry-level positions *v.* education applic-

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able to the span of one's career; and the dichotomy between training *v.* education. The 1970s reduction in the number of GSI students and the consequent reduction in faculty in each institution, was amplified in the 1980s by the closing of several GSI programs. The events of those two decades have focused and sharpened this debate, and the issue of specialization is beginning to receive extensive attention. Specialization has been discussed and proposed primarily in terms of a vertical market segmentation with some GSIs focusing on academic and research (primarily special) libraries and others focusing on public and school libraries.<sup>10</sup> The Council on Library Resources has begun funding programs at several GSIs whose intent is to accomplish a certain measure of specialization in the education of academic librarians. Such an intent is controversial enough that great care has been taken to phrase those intentions in very circumspect fashion. Only in even more circumspect fashion have GSIs begun to address the possibility of horizontal-tier specialization. Certain GSIs such as Columbia and Chicago have seen themselves as playing a special role in educating future leaders, but an examination of their curricula over the years would show no discernible differences between the curricula of so-called future-leaders schools and others. A university-initiated curriculum review at the School of Library Service at Columbia has at least pointed the school in the direction of horizontal specialization. How it might be implemented, however, is only beginning to be addressed.

In any case, the development of business education at the undergraduate and graduate levels is a model that the library and information management community should consider carefully. With trends toward convergence in the information world, GSBs and GSIs are increasingly addressing the same domain and the same needs. The constraints that have helped produce the educational structure for business and management education are to a large degree present in the environment of education for information management in the GSI context. GSIs share the same problem of the sequencing and repetition of the basic components of a professional education, and GSIs are disproportionately located at more highly ranked institutions where undergraduate professional education would be an issue.

One scenario suggested by the comparison with business education is that the uniformity and similarity of GSI programs may become a thing of the past. To the degree that education for information management remains a distinct specialty—as opposed to a concentration within GSBs—it is not unlikely that just as in business education a hierarchical three-tier system may evolve. The “top” tier would consist of GSIs at highly rated institutions offering graduate education only. The middle

tier would offer both undergraduate and graduate education, and the third tier would offer undergraduate education only.

### **Ramifications**

Two questions were proffered by Stephen Muller, president of Johns Hopkins University at the fall Educom Conference in Baltimore in 1982.<sup>11</sup> They were: Will the library become the museum of the book? and, Can the library transcend its name?

These two questions strike at the heart of the issue facing GSI education. If the answers to the questions are yes and no respectively, GSIs can continue as before but face the possibility that they will merely educate or train the journeymen while GSBs will educate the leaders and managers. If GSIs wish to address a world where the answers are no and yes, then it is clear that both GSIs and GSBs will be educating for information management.

Assuming that GSBs and GSIs will both be educating for information management, the possibilities are for cooperation, competition, or a mixture of both. For GSIs outright competition would not seem to be a viable option, despite the greater legitimacy of GSIs in information management, as opposed to the noninformation-driven, technology-focused MIS thinking that is the historical basis of GSB interest in information management. The financial resources, the academic prestige, the organizational leverage, and the attractiveness in the marketplace of GSBs in comparison to GSIs leaves little doubt which would emerge victorious.

The opportunities for cooperation, however, are considerable. There is now a window of opportunity for establishing cooperative relationships. Those persons within GSB faculties who are attempting to introduce information management as a broad topic, as opposed to MIS, are still in the position of the early innovators, looking for support and allies. In an academic context where loyalty to the formal reorganization is weak compared to more conventional bureaucracies, and where horizontal, peer group, invisible college ties are stronger, support and allies from outside the GSB proper are quite welcome. As education for information management in the broad sense becomes more established within GSBs, that need for support diminishes and the window of opportunity will close.

GSIs have an opportunity that extends over the next few years at most to establish cooperative endeavors with GSBs, before GSBs claim the turf for good. How fleeting this window of opportunity may be is perhaps indicated by the fact that in 1985 AT&T gave its corporate goal

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as: "Being a world leader in the delivery and management of information." This is a rather different statement of mission than being a world leader in telecommunications. Not only have the traditional data processing and telecommunications components of the information industry restated their missions in terms of information and information management, but virtually all of the major players in the aerospace/defense industry—including Boeing, Lockheed, McDonnell-Douglas, and Martin-Marietta—have cast information-related functions and information management as major corporate missions. With such major corporate interest, GSBs cannot be far behind and competition between GSBs will shorten that lag.

What might cooperative relations look like? The most likely scenario for cooperation is creating joint programs leading to joint degrees and joint faculty appointments. Cooperation could start with smaller projects and functions such as joint workshops and conferences on information management topics—e.g., a workshop on transborder data flow and how it affects industry and the information services of industry. The actual details of such a scenario must be worked out locally.

Cooperative relationships, however, will be established only on the initiative of the GSIs. One fact that becomes very clear from the survey is that information-management-oriented faculty in GSBs are unaware of the potential interest of and overlap with GSIs. One token of that lack of awareness is the trilogy of "Archipelago of Information Science" articles by McFarland et al. in the *Harvard Business Review*. Mentioned as islands in the archipelago are: data processing, telecommunications, records management, word processing, and office automation. Never is the library mentioned as an island in the archipelago. We have not transcended our names and the perception of libraries and library schools is such that it will never spontaneously occur to GSBs to regard GSIs as partners or stakeholders in information management.

In summary, the key to a viable and dynamic future for graduate schools of library and information science is likely to be a dynamic GSI-initiated program of joint development with graduate schools of business. The window of opportunity for affecting such a cooperative program is open now and will be closing soon.

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