



## **NEWSLINE - Winter 2000**

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### **Hurr-E Up: B-Schools Striving to Get E-Business Courses and Resources Up to Speed**

“They’re beating down the doors!”

It’s an image more evocative of medieval looters storming a castle than of 21st century grad students demanding entry to b-school classes. Nevertheless, that exclamation is echoing from professors and deans who have ventured into the wired and wireless worlds of electronic commerce. The pounding they hear might not only be the clamor for anything e-, but also a symptom of stress headache in academe.

“A practical fact is that every university that is offering e-commerce or Internet marketing, or any titles like that, has an identical problem. They can’t handle it,” said Stu Feldman, director of IBM’s Institute for Advanced Commerce. “They try and offer a seminar for 12 people and they get the entire graduating class.”

“Our biggest problem is turning people away,” said M. Venkatarmanan, professor and chair of operations and decision technology at Indiana University’s Kelley School of Business. “When you do something for 30 to 50 people, the rest of the 160 want to get in.”

“Student response has been overwhelming,” said Avi Seidmann, Xerox professor of computers and information systems and operations management at the University of Rochester. “We’ve got 110 students in a classroom and we’re getting e-mails from students who didn’t get in complaining, ‘It’s critical for my career, I want to join in.’”

“When we went through our initial registration for spring, every course had waiting lines at least as long as the number of students in the course,” said Howard Frank, business dean at the University of Maryland at College Park. “I think virtually every second year MBA student is taking at least one course in e-commerce.”

The lines at the London Business School may be called queues, but it still means students are waiting. “Last year the main e-commerce course was an unbelievable success, and the word spread really fast,” said Chris Voss, deputy dean at the school. “This year we have increased the number of courses and the number of students has doubled or tripled. We’re talking about 40 percent of our MBAs trying to get into e-commerce electives. I have to go back to my colleagues and twist their arms to add extra streams or increase their class sizes beyond their limits.”

With the future of commerce virtually spread out on student laptops linked to the world of e-retail everything, it’s no wonder that courses promising to blend management with technology are oversubscribed before the ink in the catalog is dry. Prospective entrepreneurs believe that product plus marketing plus IT equals wealth. Those who are aiming for a berth in consulting or corporate

life know that recruiters are becoming as interested in the number of “e-”s as the number of “A”s on their transcripts.

And students aren’t the only ones counting on b-schools to come through with techno-management courses.

Beneath the visible tip of e-commerce, is the iceberg of e-business, where companies of every size and stripe are struggling to keep up with, and make sense of, the tons of electronic data coming into their operations from customers, suppliers and competitors. Issues like supply chain, data mining, scalability and channel management have taken on a technological dimension that affects the work of many more than just IS people.

Corporations see it as urgent that their current and future employees get the training they need to jump on the e-gravy train that is rolling fast. An article in the publication eMarketer and eStats reported that electronic commerce would generate \$71.4 billion in revenues by the end of 1999, and that that number would mushroom to \$400.1 billion by 2002, and \$654.3 billion by 2003. “Worldwide in 2003, \$1.24 trillion in business will be consummated electronically, nearly all of it over the Internet,” the article predicted.

It is no wonder that at SMU’s Cox School, a group of corporate partners such as GTE, Nortel, SABRE, and Ernst & Young are helping develop a change management course that is based on their immediate needs. “This is a tremendous issue,” said Marci Armstrong, associate dean of masters programs. “The e-business model really puts at risk everything traditional corporations have at stake. It changes so much about distribution and pricing and retailing. Some major corporations are having great difficulty making this transition and understanding that it truly is a different business model.”

Technology companies are scouring campuses for people who are equipped to consult with corporate customers on issues related not only to IT but Internet marketing, managing and decision-making, as well.

“Our bottom line is that e-business needs to grow fast,” Feldman said. “IBM will benefit as it grows and, of course, we need more intellectual and human inputs. The b-schools are a natural place to find both.”

### **Have we been here before?**

Whenever major change takes place, the question is raised about whether or not there has been a similar occurrence.

Peter Keen, a visiting professor at Fordham University and head of Keen Education, a consulting firm that focuses on the links between business and technology, believes that the e-business surge in b-schools is reminiscent of the early days of organizational behavior, when there was a lot of openness for new ideas and for cross-disciplinary work. “It was very invitational. Now we’ve got to shift to the same sort of invitational tradition. We need practitioners and we need people with something new to say,” Keen said. “What would get the best people who aren’t in the tenure tradition to want to come and work with us, whether on a research or teaching basis?”

SMU’s Armstrong thinks it is similar to the beginnings of entrepreneurship. “When we started to do entrepreneurship, you looked around and there was no academic field. So we started to bring in people from the entrepreneurship community and say, ‘Teach us about this.’ Now there are people who have Ph.D.s in entrepreneurship, there are journals. It has evolved tremendously,” she said.

Andrew Policano, business dean at the University of Wisconsin-Madison, sees a similarity between e-commerce and quality. "A decade ago, quality was sort of at the same place e-commerce is today. Some faculty got drawn into the fact that every company needed a guru on quality. And they went out and did that very applied work," Policano said. "Those people we don't hear from today. Those people who did the fundamental work are the people who are well known and have made advances in the field and that's the same thing that will happen in e-commerce."

But even if there are resemblances to earlier movements, e-business is a different kind of animal than campus-based management education is accustomed to. It moves fast, it has no history, no body of knowledge. It challenges a tortoise culture to either transform into a hare or be left in the dust.

Management education's faster-than-usual response is surprising to some. "It took 20 years to get business schools to focus on international business and some schools still are not dealing with entrepreneurship," said Joseph Alutto, business dean at The Ohio State University. "Yet, in terms of e-commerce, it has been within a two- or three-year period. The rate of acceptance and integration into the curriculum is much greater than anything we have seen before."

Yet that speed is relative. Little that is happening in e-business education today is judged fast enough by people who know what is needed.

"One faculty member at our conference leaned over to me in the middle of a presentation and said, 'I thought we were ahead. I didn't realize how far behind we were,'" IBM's Feldman said.

### **Substance over surface**

Is the technology of the Internet simply adding another communications medium, like TV, which everyone can use without having to understand? Or does it present a substantive departure from business as usual?

"There is a fundamental transformation going on in business," said Maryland's Frank.

Donna Hoffman, professor of marketing at Vanderbilt University, says e-commerce brings a foundational change to business. She and her husband, marketing professor Tom Novak, set up a research center at Vanderbilt and did some of the earliest marketing research on the Internet in 1993. In 1994, Novak taught the first e-commerce course in a U.S. business school, a doctoral seminar in marketing and computer-mediated environments, which soon was a formalized part of the marketing curriculum at Vanderbilt.

"If you look at the Internet as a communications medium, or as a marketplace, the model underlying it is so different than that underlying television," Hoffman said. "It is not just about buying, it is the idea that I can provide information to the medium, and I cannot do that with any other medium. It is profound."

"We have faculty members who truly believe there isn't a fundamental change going on," said SMU's Armstrong. "That business principles are business principles, that nothing is changing, that this is just a new way to distribute products or to advertise. They see it narrowly. I'm saying it is much more than applying traditional business principles to this new medium. It is much more than that."

Placing an "e-" in front of course names or hastily adding a couple of Internet cases to a marketing course will not satisfy customers' demands, educators say.

“This is at the foundation,” said Drexel University’s business dean Pamela Lewis. “I think the change is too radical to suggest it is just a new medium. It is going to affect the way we work, the way we process this information, the way organizations are structured.”

Several b-schools across the country are staking their reputations, and, perhaps, future rankings, on more extensive entries into e-business. Some are responding to the demands by creating E-MBAs, or MS degrees. Some are installing new concentrations, or creating a series of electives to form an “emphasis” within a concentration. Others are establishing centers of research or electronic laboratories. Some are using their Web pages to display their fledgling research and teaching materials to try to build both a base of learning as well as establish e-cache among their peers.

A sampling of schools that have approached e-commerce aggressively reveals the diverse paths of the revolution.

This semester, Creighton University introduced an M.S. degree, strictly dedicated to e-commerce and offered in the evenings for both full- and part-time students. The 25 students in the first cohort was a greater turnout than expected, said Joe Phillips, director of the graduate business program. “We didn’t market it much at all.”

After the foundational work, the program consists of 11 e-commerce courses within various departments of the b-school, including marketing, management, strategic planning and IS, as well as courses in the schools of law and computer science. “It is integrative within the college, but it is truly a stand alone program, not a techno MBA,” said Robert Pitts, dean at Creighton.

The school also has an e-commerce research center, funded with \$1.5 million from an alumnus, the founder of Ameritrade, Joe Ricketts.

Georgia State University is the only U.S. school in a six-school consortium that will offer a synchronized Global E-Commerce Master’s (GEM) program next fall. Schools in Denmark, Norway, Germany, the Netherlands and Greece, along with GSU, collaborated over one and one-half years to design the curriculum that will be fleshed out with projects, cases, activities and lecturers from their local areas. GSU has had 200 requests for applications to the fall program, according to Sid Harris, business dean.

“From an economic standpoint, ideas that work very well in the U.S. sometimes have difficulty outside because of customs or legal infrastructure,” Harris said. “The students participating in the program will be made aware of these issues.”

Maryland’s b-school has created a series of six cross-discipline concentrations that allow students to take four to six courses offered by four different departments that all have a strong technological flavor. “Not from a bits and bytes point of view,” Frank said, “but from an impact on business point of view.”

Many of the courses already were being offered, but they had not been articulated as specialties. “Now,” Frank said, “students can choose a sequence of courses that make up an e-commerce or telecommunications management concentration.”

Seventy-five percent of the second year MBA students at Maryland have declared both a traditional concentration and an e-commerce concentration, Frank said.

This year, Maryland also is starting a program, called the Net-Centered Economy, in which six of the university’s 13 schools, led by the b-school, will collaborate to create a research agenda that

ultimately will lead to an integrated set of new curricula for the university. Among the schools or departments collaborating are computer sciences, electrical and mechanical engineering, economics, and public affairs.

Maryland also has created a research program in e-commerce in partnership with Sun, Oracle, EDS, Lucent and a few other companies.

The University of Texas at Austin's business school offers an MBA concentration called Information Management, designed to provide both technology and business aspects of e-commerce.

"For the first time this year, one-half of the 350 MBA students accepted wanted to be in the IM concentration, but we had to hold it to 100, due to limited resources," said Patrick Jaillet, chair of UT's management science and information systems department.

"When you have folks who come here with five or six years of experience, they have a pretty good sense of what industry is needing," Jaillet said. Only about one-third of the students have a technical background, another third have undergraduate business degrees and another third have a liberal arts degree. The latter group tends to have some of the best students, he said. "They know how to think, to write, to express themselves and they want to learn. They don't come with any prior ideas that they already know everything."

Indiana University's b-school, this fall, will offer a two-year, multi-disciplinary e-business MBA major that will draw from IS, operations and decision technology group, marketing, and to a lesser extent, entrepreneurship and finance. Currently, MBA students can elect courses from those departments with no official recognition. The courses are in e-commerce, supply chain, high-tech marketing, impact of the Web on retail sales, data mining, ERP and the role of ERP in e-commerce.

"Students were going around and picking up these courses and presenting themselves as e-commerce majors. So we felt we wanted to formalize it," Venkatarmanan said.

Though most schools are staying within the graduate framework, Indiana is setting up an institute for undergraduates, in which 50 students will be hand-picked for a one and one-half credit program that includes electing courses from several departments, plus extracurricular activities.

Stanford has offered an information technology course as a part of its MBA core for three or four years, said Haim Mendelson, professor of information systems and management. In the past year, the school changed the orientation of the course so that about 90 percent of it now is e-business oriented. The school also is offering a new elective course for general managers of e-commerce and plans to offer another new course next fall called "Evaluating E-Business Opportunities," centered on putting together business plans and starting new businesses.

Drexel founded a center for e-commerce last year with a \$1 million gift from Safeguard Scientifics, a 25-year-old venture capital company that now focuses on Internet ventures. The center has seven cross-disciplinary research projects on the strategic, managerial and operational challenges associated with e-commerce, said Lewis. Seven courses that form an e-commerce concentration also have been developed.

Vanderbilt's b-school offers 19 e-related courses, from which students can choose to put together a four-course e-commerce emphasis, begun in 1995, or a six-course telecommunications and electronic commerce concentration (TEC) launched in 1997. More students specialize in e-commerce there than any other field except for finance, said Hoffman. The school also has a

corporate-sponsored research laboratory, called eLab, that focuses on the scholarly study of commerce on the Internet.

SMU's Armstrong said that her school did not want to put new courses in a catalog without doing some developmental work with practitioners. "Even our MIS faculty are having to retool and retrain, so we decided to approach this by pulling together a group of corporate partners," she said.

The school selected 12 partners, some major corporations and a few e-commerce startups, from among many that wanted to work with the school. "Everyone wanted to be part of it," Armstrong said. "We almost got the sense that they would gain some kind of credibility by the university connections because it is so new for them."

The partners' input is reflected in the development of six courses, the first of which, a foundational e-commerce course, is being offered this semester. The other five will be launched next fall.

"When we started to benchmark what other schools were doing, we found a lot of repackaging," Armstrong said. "People taking existing courses and pulling together what they called an e-commerce major. But what they really have is one e-commerce course, three or four existing marketing courses, two or three existing MIS courses, and they call it an e-commerce major. We did not want to do that," she said. "We are fundamentally building courses with these corporate partners. For once in the academic community, we realize that we need to learn from them. This is a place where we have a lot to learn."

"Our partners knew before they signed on that our expectation was not financial," said Armstrong. "We are not asking for any endowment, we're not asking for anything. Their commitment was to help shape curriculum, number one, and number two, to provide real e-business projects for our students and, third, they had to sign on to hire e-business interns."

Like many other schools, SMU's e-commerce is a project-oriented course. A team of four to six students may work with a corporation that is trying to do a turnaround and understand the impact of e-commerce on their business, or work with a .com company that is having delivery and implementation problems. There also are weekly classes with lectures by the professor and guest speakers.

The University of Rochester began offering an MBA in e-commerce last fall. Students take Internet marketing, technology of the Internet, advanced marketing, and several IS classes. "We try to keep a balance between the marketing issues and the technological issues in the program," said Rochester's Seidmann. Besides the e-MBA, the school also has added e-commerce related cases to the core MBA curriculum. Students take a case study and look at e-commerce marketing, operations and IT issues, in those various classes. "E-commerce is the glue of all the issues we look at in the second quarter," he said.

### **Corporations pushing hard**

Manufacturing and service companies reportedly are pressing b-schools hard for problem-solving, as well as new e-savvy managers. Technology companies like Sun, Oracle, Microsoft, ATT and IBM are forging alliances with numerous schools, in the U.S. and abroad, both to help shape the content and to recruit the resulting graduates.

IBM sponsored an invitational conference last October for about 22 business schools that already were engaged in or committed to master's level e-business education. Another conference is planned for later this year.

“We’re talking to single and multiple university groups to figure out how IBM can best be useful and how we, over the long run, benefit from the results,” Feldman said.

“There is a whole infrastructure issue that’s arising, both on the course material side, and the exercises, assignments, practical side. These are issues that are going to require not trivial investments on the part of the schools. This is an area where IBM may very well be directly helpful; it is what we know how to do,” Feldman said.

In Europe, IBM’s presence in the movement may be more dominant than in the United States. Groupe ESC Grenoble is offering an e-business master’s degree partially sponsored by IBM. The company provides substantial funding, finances the school’s chair in e-commerce, and has a place, along with major European corporations, on the scientific committee that oversees the program, according to Lee Schlenker, IBM chair of electronic commerce. IBM also sponsors conferences and seminars, offers paid internships to students, and works with the school on applied research related to employment.

“We don’t claim to be e-business educators; we want to help management education as much as possible,” Feldman said. “We will offer financial support, service, software, hardware for various schools to make sure that they get going fast and well, both for our benefit and that of the entire industry. The faster the whole industry moves, the happier we are.”

As the expectations of corporations and students grow, b-schools will face the challenge of how to deliver on the promise of these technology-infused programs and courses.

Existing research is minimal, the number of faculty who are prepared to teach e-business courses is low, and competition for people who understand the blend of business and information technology is fierce.

Stress headaches can be brought on by any of the many problems that b-schools face in the electronic upheaval.

One question that reportedly raises the ire of some educators is whether e-commerce should be integrated or separated in the curriculum. Most who spoke with *Newsline* clearly favored integration.

“I think the trend will be toward integrating electronic commerce and Internet strategy into all components of the curriculum, as opposed to having it as a separate area,” Vanderbilt’s Hoffman said. “The best curriculum model is one in which all courses, all disciplines, will have something to say about electronic commerce and it won’t only be said by IT guys.”

Stanford’s Mendelson firmly agrees. “Our perspective is really that it is a mistake to think about e-commerce or e-business as a separate activity,” he said. “These activities are ingrained in everything a company is doing and certainly what companies will be doing in the future. To have a set of students who specialize in e-commerce or e-business is just not the right way to go.”

Corporations with which SMU is working are asking for the integration of technology into everything. “They are convinced that five years from now, separate courses aren’t going to exist,” said Armstrong. “They are working with us in every functional area to help integrate e-business into all of our courses.”

But innovation in the field will be done in unique areas, Drexel’s Lewis believes. “Schools that are trying to become nationally recognized in e-commerce have got to find a niche where they do

something better than anybody else, for example, in globalization or health care. The kind of vanilla e-commerce will quickly become part of the fabric of the business curriculum, and the really innovative things will be done in very specialized areas,” she said.

### **Challenges for faculty**

Probably the biggest challenges management education has to deal with in this e-commerce explosion are how to train and develop experienced faculty, how to recruit and nurture new faculty, and how to keep the classrooms stocked with capable teachers while all that is going on.

“It’s very easy to announce you have an e-commerce MBA,” Keen said, “but who is going to teach it?”

Schools that are looking for faculty are in good company. “People that you would never guess might go to one of the top three business schools were being given very nice offers from these schools,” said GSU’s Welke. “Next year the demand is going to be an order of magnitude worse. It is going to make it very expensive to put programs like this together.”

Faculty can be re-trained, Welke and others say, but he thinks the transition from traditional thinking to an e-business way of thinking is difficult. “It’s a fairly significant shift and it sucks off people’s power base, which is based largely on their knowledge and their information about a particular area,” he said. “If you say all of that is invalidated, you essentially are starting from scratch. People are reluctant to do that.”

Faculty members who are experts in traditional management fields must learn how to apply that expertise to the issues their students will be dealing with in the electronic business world.

“What concerns me most is finding the best faculty,” said UT’s Jaillet. “Without the best faculty, you can have the best ideas but you will not be able to sustain a program in the long run. We need to find faculty who can work under pressure in a schizophrenic world, where you have students who would like to learn all of the tools now to get the best job, corporations that come and want to hire students with the knowledge to solve their problems today, and the mandate in higher education to teach these folks fundamental issues about what is going to happen in the next five to 10 years. How to balance all these is pretty tough. It adds a lot of stress on faculty.”

Just keeping up with the new learning involved in teaching e-business creates additional pressures for faculty. Sometimes graduate students who have worked or interned in an e-business environment outpace their teachers, especially in the fast-changing technical side.

“I have students who say, ‘I did an internship with this company and they were doing this and this and this,’” Venkatarmanan said. “When that happens, we go and work our tails off for the next few days and do our research and get back to them. A lot of times I may be only a day ahead of them, or days behind. It takes time to find out what is going on. We can’t use last semester’s notes, let alone last year’s notes. The concepts are still there, but we need to update examples. Everyone feels a tremendous amount of strain.”

The pressure comes from the cross-disciplinary aspects of e-business as well as the fast changing technology. Supply chain management blends with data analysis, blends with strategy. In a team-taught course, the theoretical lectures of two professors may have to be coordinated with the hands-on experience of guest speakers who have been scheduled far in advance. “We are keeping on our toes and I think it is good,” Venkatarmanan said. “It’s going to take down the departmental barriers big time, it is going to create more combined knowledge because things happen so fast and it is so interlinked.”

How are schools keeping up with the staffing needs for courses right now and down the road?

“The demands are much greater than anyone could possibly imagine,” said Maryland’s Frank. The 15 faculty who teach e-commerce related courses at his school teach in the core disciplines. “Any respectable school can find one, two or three faculty to do this, but when you also have to blend this in with a research program, a sabbatical program, summers off and heavy demands from students, you always come up stretched,” he said. “At the same time, we are trying to roll this down into the undergraduate program and that’s another huge leap in faculty.”

Even though he is hiring as fast as he can, Frank foresees a shortage of e-commerce research/teaching faculty for at least the next five years.

It’s not like anything else, Alutto said, because the speed with which it has impacted schools has been far greater than the ability to train faculty.

Hiring new Ph.D.s who already have some expertise in both management and technology would be a desirable option. But educators said that pool has never been deep and the more popular e-education becomes, the more difficult it is to find prospects. It is even more difficult to pay them. “This has become a high-priced commodity,” Venkatarmanan said.

GSU’s Welke says one walks a fine line working with expert faculty because they invariably will be attracted to other opportunities for higher salaries and IPOs. His school has two faculty on leaves of absence to start-up companies. To help alleviate the either- or option, GSU recently set up an incubator for start-ups. Faculty can help launch a company and participate in stock options, and still continue their teaching.

Schools are finding other ways to either nudge their own faculty onward or to hold the fort until the cavalry arrives.

Ohio State’s b-school brings in executives who are actively involved in e-commerce to work with faculty to give them a sense of what is really happening in the field. “That acts as a spur to their developing skills and knowledge,” Alutto said.

Many schools are relying heavily on practitioners, either as guest lecturers, adjunct faculty or as part of a team, in which the full professor is “of record” and the practitioner supplies the latest expertise and experience.

“Our master’s program brings in experts from Bull, Hewlett Packard, IBM, SAP, Lotus, Danone, Credit Agricole,” said Groupe ESC Grenoble’s Schlenker. “These collaborators offer verifiable hands-on experience. They address issues and subjects that our tenured faculty are reluctant to tackle.”

Creighton is pairing its faculty members with practitioners who are in e-commerce situations every day. The school also has course “sponsors,” such as SPSS, which gives the professor one-on-one training in preparation for a data mining course, and then provides its software to students. “In these technical areas, faculty have one kind of competence and the other level of technical expertise is basically held out in the workplace, and you have to have them both,” Pitts said. “Our goal in this case is to have our faculty very much integrated with what is going on in a dynamic part of the business community. It is going to be almost impossible for a faculty member to be current enough in this area without a tremendous amount of contact outside.”

Ohio State's Alutto believes the acceptance of outsiders in the classroom is a new trend. "There is a greater sense that whatever is happening out there in terms of e-commerce is occurring so rapidly that for faculty to simply rely on reading publications of other faculty, they can't stay current," Alutto said. "There is a greater willingness to have executives who are at leading-edge companies come into a classroom and talk about the realities. Far greater acceptance than there was for international business or entrepreneurship or anything else."

At Indiana, the faculty decides the course and syllabus and tells the practitioner what the focus of the class is. "I don't see a big problem as long as the faculty is there to guide it," Venkatarmanan said. "I could see big conflicts in the future if we let the people run on their own."

Stanford uses expert practitioners on both the business and technical side from nearby technology companies. The chairmen of both Cisco and Intel lecture in the b-school. Other practitioners are being scheduled for faculty seminars in which they will describe how they deal with real business issues.

Maryland is capping its use of "non-conventional" instructors at 10 to 15 percent, Frank said. The school has an "executive in residence" and an "entrepreneur in residence." "I don't want to pretend that this is the solution to the problem. This is a research university and we have aspirations to greatness. The way we are going to get there is not just by curricula, but by research and you can't compromise about that," Frank said.

But Creighton's Pitts doesn't believe the presence of practitioners takes away from the academic depth of a school. "I think it strengthens it," he said. "If the technical diluted the academic side, there would be no engineering degrees and probably no medical degrees."

The faculty response to the opportunities of e-commerce is mixed, although most of the schools that are actively engaged report that they have at least a "critical mass" of professors who are interested.

But it isn't always easy. "We have real problems getting the faculty as a whole to research issues dealing with electronic business, and to integrate the lessons learned into the design of their courses," said Schlenker. "Although the school is technically well-equipped, organizational and human obstacles persist. Like most faculties, our instructors prefer to teach traditional subjects that they have mastered than propose innovative curriculums that will substantially increase their workload."

It is a big challenge to ask faculty to get on top of something new in their teaching and do their research at the same time, agrees Joe Blackburn, acting business dean at Vanderbilt. "It helps to have some faculty who are very involved because then people can learn from each other and learn from the companies we work with. Having companies like HP, Intel, Sun Microsystems and iVillage actively supporting our projects keeps the faculty involved in the real problems that these companies face."

### **Building a research base for e-commerce**

"Research, research, research" is the key to b-school faculties' ultimate ability to prepare for their future in e-business education, said London Business School's Voss. The e-commerce courses at his school all have grown out of individual research activities.

"The research came first. People have been working in this for at least four or five years," Voss said. "We have both fundamental and applied research going on. We have pure economics

research, we have some fairly fundamental research on the nature of the new technologies and we also have applied research into company strategies, service quality and service on the Web.”

Policano, at Wisconsin-Madison, said the best research that can be done with e-commerce now is fundamental research that has an applied emphasis.

“The worst research,” Policano said, “will be the consulting type of research where a company says ‘we need an immediate answer to this question,’ and faculty members get drawn into that to provide an answer to the topical issue of the day. It doesn’t advance the literature at all, it doesn’t advance our understanding, it just solves the question today.”

Stanford, along with several other schools, is creating a research center to study the phenomena of e-commerce and e-business and their effects on business. Ultimately, that learning will be reflected in the school’s teaching and community activities, said Mendelson, co-director of the center.

The aim is to use the new research center to interest faculty members from all disciplines in taking up initiatives in e-commerce. “We are supporting a large number of research projects where a professor has developed new knowledge by leveraging knowledge of an area and adding to it, learning about the technology and its implications to create new research. In the process, faculty also learn about e-commerce and think about what that means in the context of their own courses,” Mendelson said.

The outlet for e-commerce research, Keen believes, will have to be the classroom, rather than the journals. “You can’t publish most of it because by the time the stuff appears, the world has changed. If I have to wait 18 months to two years to publish the work I do now, I’m not going to have any influence on the people who matter, the policymakers, decision-makers.”

Is there a risk to junior faculty in taking on research in the electronic commerce area? The response is mixed.

“If one wants to study e-commerce from a marketing perspective, there is no more risk to that than there is to studying any other marketing problem,” said Alutto.

“Part of the issue depends on how a faculty member sees this issue of e-commerce. Is it a distinct field that the faculty member believes requires a unique set of skills, or is it simply a focus of study where you are using a traditional framework to look at that problem area?,” Alutto asked. “My guess is that any faculty member who sees it simply as a problem area and bases his or her work off a traditional discipline will have no more difficulty than any other faculty member. But if the faculty member took the stand that this is a new field, that would be a very high risk.”

Most of the junior faculty that his school is thinking of hiring, Alutto said, are looking at e-commerce from a particular disciplinary orientation, such as marketing or logistics or supply chain. “That’s probably the best way for junior faculty to approach it.”

“I’ve heard many times that it is a risk for new faculty,” said Mendelson. “Some people say the Internet changes everything. You need to start everything from scratch. We believe that established scientific tools and techniques can be applied fruitfully to study new problems. We don’t want people to throw away their tool set to start from the beginning. We want them to use the tools they are experts with and apply them to new problems. The level of risk always is somewhat higher when something is untested. But the biggest risk comes from using new tools and new techniques, and we are not asking people to do that.”

Policano said the risk of devoting research efforts to e-commerce problems is minimal because its impact already is clear. "There is no business that comes into the school these days that hasn't been affected significantly by it. The only problem I see is that it is not an area in and of itself. It's really a technique, a new application that is subsumed by a whole variety of other areas, so you won't see an e-commerce department developing."

Policano believes that if e-commerce has to be located in any one place, it would be supply chain management, how technology affects the distribution system.

Some educators who view e-business as a more revolutionary movement also tend to see its research as riskier.

Vanderbilt's Hoffman said she and her partner-husband could afford to do e-commerce research in 1993, even while her colleagues laughed and thought it was ridiculous. "There was a sense of 'Why would you want to waste your time on this?' Fortunately we had tenure and academic freedom. There was not much they could do about it.

"We were never deterred, although we were sometimes dismayed and often frustrated because there were publication issues," Hoffman said. "We had to seek journal outlets that were different from the traditional ones in our field."

Keen, at Fordham, believes the faculty who are most likely to become engaged in e-commerce are those who already have tenure or, if they do not, are prepared to take risks.

"It's very dangerous if you are in a university that is pretty orthodox on research," Keen said. "There's not a single person who has ever got tenure on e-commerce. If you are talking about betting your future education on a field that does not have a research tradition, the tenure thing will kill you every time. The best doctoral students from top schools will be afraid to take themselves out of the mainstream and go to a school that doesn't have the traditional tenure."

Research has to become more relevant to the e-commerce mission, Keen said. "If e-commerce is going to be taken seriously there has to be much more deliberate discussion of what the research topics are going to be. I'd like to see much more pressure, legitimately from the top, that says, 'You are part of an institution, not just professor x trying to get tenure in finance. Your research has to support our mission or we are going to be a second rate, undifferentiated, electronic commerce case house.'"

The need for strong research and teaching in e-commerce, Keen said, requires deans to have to exert more leadership in dealing with senior faculty who drag their feet. "If this is the future of the university, if this is the future of educational research, it should be the tenured professors who share in that mission."

But senior faculty may not be eager to move into a new area when they are so successful in old areas. "It's a standard problem in much of the world," Feldman said. "The academic keel prevents things from falling over, but it also prevents things from going too fast."

### **Embedding technology**

Business schools have never been havens for geeks, said Vanderbilt's Hoffman, who refers to herself as one.

MIS has always been an academic orphan, said Keen. Their comments point to another essential difficulty management schools face in integrating more “e-” into their curricula. Management scholars are not oriented around technology.

“The big problem business schools are going to have is they’ll all recognize e-commerce is key, but they have no strength in the technical part of it,” Keen said.

“Technology is not embedded. It doesn’t have the faculty, yet it is going to become the basis for just about every program,” he said. “If you are going to have e-commerce, you have to have business educators teaching. I don’t want computer science people teaching XML, nor do I want people in marketing picking up a bunch of cases and generalizations about them when they don’t understand the technology.”

Keen said the range of technologies is progressing so quickly that b-schools are not even familiar with the tools that allow for all kinds of brokering and deal-making between companies and individuals. “If you don’t know the technology, you don’t know what is practical,” he said. “If you are teaching the technology thinking of five years ago, you are not helping people recognize that when you get new technology, you’ve got new business possibilities.”

Questions that management faculty have to be discussing with their students are impacted by the available technology. XML, for example, changes how much an organization does internally and how much it can do with electronic partners.

“I’d be very uneasy about having someone teach me e-commerce who doesn’t know anything about scalability, who can’t tell me which companies I will go with if I’m in a supply chain and I want to keep all my catalogs up to date. I need someone who can tell me how to look at the news about technology and tell me how to make sense of it,” Keen said. “Business drives the technology, but without the technology, you don’t have a business to drive.”

Will students need a great deal of technical competence? “There’s a whole spectrum,” said IBM’s Feldman, “but in practice they are going to have to have their hands at least a little technically dirty.”

“In order to really appreciate why e-commerce is where it is now, students have to understand some of the technology,” UT’s Jaillet said. “Not in the detail of an engineer or a programmer, but of someone who would make a decision, for example, about selling a product on the Web or not. You have to understand the technology, have to understand what people are proposing.” The demand for people who understand just the technological side of the world’s data and communications systems is outstripping the supply by a huge number, according to Keen.

“The shortage of people in IT has been huge and getting worse,” said Keen, “and that is just in the straightforward jobs of programming and development. The need for people who have both business and technology know-how is overwhelming.”

Corporations need new consultants, people who can help structure and design the way businesses move into e-business. That requires an understanding of the business fundamentals at least as much as the computing ones, said IBM’s Feldman.

Until the various b-school efforts shake out, and it becomes clear which programs are the most effective in training e-managers, corporations are going to go for volume in their outreach to b-schools to influence their curriculum and technology plans.

Keen believes that once a couple of good schools emerge, the corporations will be flooding in.

“The corporations are the ones who really are driving education, through the tight links they are making to universities both for research and education,” Keen said. “They are beginning to shape the results, they are looking for a different type of output from the universities. Many schools are going to do well initially, but out of it will emerge no more than four major centers. The game is up for grabs.”

### **Future impacts**

As cooperative as the relationship between b-schools and corporations is today, one educator said he envisioned even greater competition between them as the demands of e-commerce increase.

Neils Bjorn-Andersen is professor of information systems and the director of the center for electronic commerce at the Copenhagen Business School, one of the six schools in the GEM consortium. He said he is concerned about what could happen if business schools cannot move to the forefront of technology.

“In the long run, and it may not be that long,” Bjorn-Andersen said, “business schools are facing serious challenges from consulting companies that have major research groups and development groups of their own, and are more lavishly funded.

“At this point you could say universities have a monopoly in granting certificates, but if that is not based on true contribution in the form of research and learning opportunities, then we are certainly going to be made extinct,” he said. “I’m frankly worried about the possibilities of maintaining a research that is relevant to the industry.”

Others, however, don’t see as dire a future.

“I don’t see any way that the Internet and e-commerce and those sorts of issues will not be integrated into the fabric of our life,” said Hoffman. “There always will be a demand for courses, for programs, research topics, and it will become a bona fide area of study.” Said Feldman, “The e-business transition is just starting. This is a 10-year journey, not a 12-month story.”

E-commerce will become like quality has become, Policano said. “Quality was the focus of everything we talked about, now it no longer is that way. It is not that it isn’t important, it is ingrained in every single thing being done right now. We no longer need the hype because it is so ingrained. The same things will happen with e-commerce.”

The debate over whether e-commerce brings a fundamental change is not important, Policano said. “The important thing is that what’s happening in business today is very significant, it is being very significantly affected by e-commerce. What is important is that we understand it better, we use it better, we do more research on it, and we have it in our curriculum. E-commerce is going to be pervasive throughout our curriculum, in every area.”

So, perhaps the classes that students are beating down the doors for today, will be the ones that tomorrow, they just hope begin after 10 a.m.