Creating Renaissance Employees in an Era of Convergence Between Information Technology and Business Strategy: A Proposal for Business Schools

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ABSTRACT. As e-commerce increasingly predominates business transactions, Internet-based technologies are becoming pervasive and increasingly customer facing. As a result, integration between IT and business-strategic functions is increasing. This new cross-functional economy requires Renaissance managers and employees who understand this convergence. In this article, the authors examine barriers that business schools must overcome to produce the needed cross-pollinated employees. Suggestions for business schools attempting to create timely and cross-functional business programs are also provided. Business schools should focus on knowledge development and cross-functional integration and largely cede skill-based training to alternative or ancillary venues. As well, they should integrate e-commerce and technology issues throughout the curriculum.

Technology is managed by two types of people:
Those who understand what they do not manage,
Those who manage what they do not understand.

Anonymous

Despite the recent market adjustment signaling that e-retailers need to focus on profitability, consumer online sales continue to grow. North American e-tailing sales for 1999 have been estimated at $20 billion, with sales totaling $42.6 billion for the first 11 months of 2000. (Forrester Research, 2000). U.S. e-commerce is predicted to reach $269 billion by 2005 (Jupiter/Media Metrix, 2000). Even more eye opening, business-to-business (b2b) e-commerce transactions are growing faster yet, with intercompany trade measured at $43 billion for 1998 and estimated to increase at an annual growth rate of 99% to $1.3 trillion in 2003 (Harris Interactive, 2000). Worldwide business-to-business and business-to-consumer spending is forecasted to reach $6.8 trillion by 2004 (Forrester Research, 2001). E-commerce as a major discontinuous innovation is not only here to stay, it is changing the way we do business.

Because of these information technologies, particularly the growing use of the Internet for marketing, communications, customer service, and purchasing, change is rapid and business success requires flexibility and adaptability. Employees, regardless of functional area, are increasingly required to understand consumer needs and business strategy to produce competitive offerings. As technology and information retrieval become more user friendly, available, and accurate, the needs and behaviors of consumers, business buyers, competitors, and suppliers are changing. As a result, new business models and relationships are being forged that increasingly require cross-disciplinary knowledge.

Specifically, as the use of technology in business becomes more pervasive and customer directed, the increased integration of IT and business strategy functions is necessary. This merging of technology and strategy requires a new type of crossdisciplinary or Renaissance employee who clearly sees these emerging interrelationships and crossfunctional needs. As a result, students, employees, and managers need to be trained and likely retrained throughout their careers to operate in this crossdisciplinary, customer-facing business world. In this article, we address the following key questions: Where, how, and by whom will these individuals be trained? Will university business schools be flexible and resourceful enough to meet the ongoing need for interdisciplinary education? Or will a hybrid education model emerge that draws both on business schools and corporate or commercial training venues? Further, how will the challenge of providing meaningful rather than superficial crossfunctional training be met?

In our article, we (a) assess the evolving IT/business strategy relationship,

(b) examine the role and abilities of business schools to provide crossfunctional education, and (c) suggest what changes are needed to educate future managers and employees.

The Evolving IT/Business Strategy Model

In the past, business schools generally considered technology and business strategy as separate functions, as did companies. IT provided and maintained the infrastructure, while others "used" it to conduct business. As such, technicians did not focus on business "content," whereas functional-area employees and managers often learned only as much about technology as they needed to operate their particular platforms. In the 1990s, a number of change or inflection points occurred that affected the IT/business strategy model. The first was the increasing transparency, or understandability, of technology, especially as it related to the Internet. Easier-to-use software allowed technically proficient—though not expert—individuals to act independently in Web page development. Thus, marketing departments often posted the first company Web pages. Modahl of Forrester Research wrote,

> Frequently, the IT department, keeper of the mission-critical system, was not the group that began experimenting with the Internet as a customer-facing technology. Here, often that role has fallen to the marketing department. In part, this happened because early WEB sites were little more than electric brochures. Frankly, IT managers considered the WEB to be a trivial technology—one without real impact on the core business systems. Marketing assumed responsibility for managing the WEB site, and in many case that is where it still resides . (Modahl, 2000, p. 168)

Nevertheless, as businesses recognized the need for a Web presence, Web development became an important mission of all functional areas, including the IT department. In fact, the need for more technically complex Web pages to perform business transactional functions, such as buying, selling, and information acquisition, required technical knowledge and skills that were beyond marketing (Modahl, 2000). However, though IT professionals had the skill to code Web pages, they often overlooked attributes of importance to consumers, such as easy access to information, intuitive navigation, and quick transactions. Moreover, managers needed to understand how possibilities created by technology could alter business strategy fundamentally. A second inflection point in the IT/strategy model had been reached: The need for crossfunctional knowledge.

Thus, online initiatives became increasingly strategic, with both marketing departments and information technology employees needing to interact to manage e-commerce. Businesses needed to address the issue of integrating IT, marketing, and strategy, and perhaps to restructure their missions, when necessary. As Steve Jobs argued, "Technology is the easy part, the hard part is, What's the product, Who's the customer and How do you tell them about it?" (Jobs, 1999).

Convergence Between IT and Strategic Areas

In the corporate world, technically proficient strategists from functional areas are needed along with key employees with some degree of crossfunctional training. Mary Modahl (2000, p. 157) described the "New Technical Executive" as someone "who possesses not only a background and skill to understand technology deeply, he or she also develops a broad understanding of the business as well. This individual is more likely to have an MBA than to have started out as a software programmer. Yet, neither is the New Technology Executive a neophyte." Extending this view, the new manager and/or executive not only must be knowledgeable in both strategy and technology but most important must also understand their integration (Earl & Feeny, 2000).

Moreover, though technically knowledgeable executives and managers are needed and are critical to the success of the organization, a more fundamental change is also needed at the levels of individual technology workers and code writers. New market dynamics increasingly require individuals with programming skills and adequate knowledge in functional areas in which they are working (such as strategy and consumer behavior).

Will Business Schools Meet These Needs?

The desired "tech-exec" ideal, along with the need for crossfunctional skills at most employee levels, has led to the question of where these individuals will come from once the small pool of self-taught crossover managers is tapped. Will universities be flexible enough to produce them in a timely fashion, or will business itself move more into the arena of education, either directly or via commercial training vendors?

Business schools must act now to restructure their missions or risk becoming irrelevant. This will require more than the creation of separate e-commerce tracks or special areas of concentration. The creation of new areas is problematic because it splits resources and creates artificial barriers between and among professors and students. Yet, this is usually how business schools adapt to environmental changes, because it is much easier for administrators to show progress by encouraging a few faculty members to design a new track or area of specialization than to urge and support the general adoption and integration of an innovation across the entire school. Currently, the debate continues: Some business schools, such as the University of Virginia, Columbia University, and the University of Chicago, have opted to integrate e-commerce with the general curriculum, whereas others, including Kellogg (Northwestern University) and Wharton (University of Pennsylvania), have instituted separate programs (Leonhardt, 2000). Whether schools initially choose specialization or integration of e-commerce, the most logical organizational end-goal is the integration of e-commerce into the general curriculum, with the recognition that ultimately most courses will be revamped to varying degrees to match business realities.

Lessons From the International Business Analogy

In the past, business schools made a similar choice regarding international

business (IB) programs. Similar to the current e-commerce debate, that debate raged over whether to develop separate international programs or to "internationalize" the general curriculum. The concept of integration was compelling because it matched external realities most closely. Many individuals felt, however, that it might be more expedient to create separate IB tracks or programs initially, although most agreed that eventually the ideal outcome would be the internationalization of the entire curriculum. Both routes were taken, but more often than not specialized areas or degrees were created. The problem was that once special areas were created, they became entrenched bureaucracies unto themselves, remaining separate and often evolving no further toward general integration. These programs continued to exist even though subsequently the general curriculum became internationalized, often resulting in hidden curriculum redundancies.

Removing Disciplinary Boundaries

Though the integration of e-commerce with the general curriculum is clearly necessary, it will take time, require political finesse on campuses, and only produce part of the change needed in business schools. Additional measures need to be taken to produce the Renaissance graduate needed by business specifically, and by society in general. To do so effectively will require more than an integrated curriculum or the creation of specialized areas. It will require a rethinking of the business school model at a more fundamental level. Disciplinary boundaries should be examined and changed. For example, if the new business model calls for greater integration of technology and strategy, then all business disciplines and functional areas must coproduce such individuals to varying degrees.

As a first step, this process could begin by permitting less rigid degree or major requirements. With this more flexible approach, students would be freer to construct their majors, initially resulting in a degree that could match, for example, Information Systems (IS) courses with courses from one or more of the other business disciplines. At first, programs could offer a new cross-functional degree by permitting students to enroll in courses for "major" credit from classes carefully selected from the various functional areas. Over time, as the faculty and courses themselves become more integrated, this format could become more formalized, resulting in a variety of newly minted cross-functional degrees with new emphases such as knowledge management. Though initially this outcome might be obtained without intensive interdepartmental interaction, ultimately it would require disciplines to integrate not only on paper but also intellectually. The most important requirement, in our opinion, for attaining this outcome will be professors who are knowledgeable in both technology and strategy and who understand and can teach their cross-functional integration.

The Renaissance Professor

In what department would such crossfunctional faculty members be housed? The answer might be that business schools would function better without categorizing professors into orderly groupings such as accountants and managers, but rather by intermixing professors as demanded by business need for crossfunctional expertise. Also, new professors could be hired for joint appointments, when qualified. These actions would help to overcome the present business school structure, which impairs crossdisciplinary creativity and stifles the flow of knowledge information because of disciplinary separation.

Overcoming Inertia

To achieve these goals, academia, like the corporate world, must overcome resistance to change and recognize that the more entrenched the organization is in its extant modes of operation, the greater its inertia. As an example, businesses transitioning from bricks and mortar to "click" and mortar typically face a great deal of resistance (Grant & Huston, 2000), or "gravity," pulling them back to the status quo (Modahl, 2000). But nowhere is there greater entrenchment than in the academy. As a model, university processes are antithetical to the fast-changing companies for which they train students. Whereas the corporate world is motivated to change by competition, fear of obsolescence, lost revenue, and lost jobs, in the academy professors' jobs and incomes (especially those in decisionmaking positions) are tenure protected and hence not affected or threatened at all, thus motivating little sense of urgency or empathy with business dynamics. Time cycles for adoption of new paradigms need to be responsive to changes in the business world (Gleick, 1999). To overcome such inertia will require the combined, informed efforts and resources of administrators and faculty motivated by accrediting organizations, corporate competition, relevancy to students, and the increasing pressure from public constituencies to change (Pharr, 2000).

Crossfunctional Education and Training

The education model is changing, and business schools face competition that they never faced before (Applebome, 1999; Tapscott, 1998). To retain employees, corporations increasingly are taking the initiative in training and education. Using both in-house programs and commercial training vendors, the corporate world is providing self-directed or commercial on-site training, computer-based distributive learning (CBT), hired mobile classrooms, or some form of Web-based distance learning (Millard, 2000). Though cross-functional education is a general goal, the preponderance of this training currently involves skill maintenance and job enhancement. At present, most CBT and online learning courses are skill and technology based, such as those for learning or refining programming skills such as C++ , or for using and understanding commercial software like MS FrontPage or Windows2000. Though many of these learning platforms have distinct advantages such as asynchronous self-paced learning, repeating lessons, and convenience, they largely facilitate learning at fundamental and practical levels and focus on immediate and short-term training needs. They help to keep a workforce current and

more efficient as they provide or hone skills, but they hardly give functional-area managers an understanding of how business is being changed by new technologies in a fundamental strategic sense. Nor do they teach technology workers how online consumer and business buyer needs, behaviors, and expectations are changing.

Still, some commercial vendors as well as university distance-learning programs are offering more courses in functional business areas such as human resource management, leadership, traditional marketing, management, and entrepreneurship. Such providers also are rushing to offer e-curriculums with an emphasis on technology. Unfortunately, these offerings often mirror existing traditional courses that have not been integrated and typically only have been adapted and modified for distance learning (Millard, 2000; Rayport & Sviokla, 1995). Thus, there is still little real evidence of true integrative cross-functional training for IT employees. Likewise, there are not enough courses aimed at bringing nontechnology employees up to date on technology changes and developments at a strategic level. Thus, managers often do not understand what technology solutions are possible and truly deliverable to customers (Modahl, 2000). Though these platforms will provide a modicum of crossfunctional training, if only by exposing managers and employees to other functional areas, they in themselves are not truly crossdisciplinary. Integrated crossfunctional courses will be difficult for commercial vendors and distance-learning programs to develop in the short term. Thus, the question remains regarding whether such forms of delivery can meet the deeper and more long-term needs for crossfunctional training.

In our view, keeping a company's workforce current will be an ongoing corporate training mission. Providing this training is likely to remain the mainstay of corporations and commercial vendors. Other than providing distance-learning or other ancillary programs, business schools should not attempt to compete in these areas, in which they can offer little value addition. Instead, using their broad-based resources and educational core competencies, they should focus on the substantial and as-yet largely unfulfilled niche of integrative crossfunctional teaching.

The Role of Business Schools

Business schools should continue to focus on their core strength: the conceptual development of business thought, theory, and practice, which results in the advance of new knowledge, which in turn is reflected again in the classroom. In the present case, the focus is the synthesis of technology (in the broad sense) and critical strategic thinking. This will not simply mean that nontechnical managers and other employees should be able to use their e-mail and word processing software efficiently. Rather, it will mean that a fundamental understanding of the meaning and flow of technology as a medium (as well as a support infrastructure) should underlie strategic thinking. It will also mean that the implications of technology for the organization and its customers is the framework within which strategy is planned and executed. Further, it will mean that technical designers and engineers will design and plan products predicated on a deep understanding of consumer wants and needs. Information technology workers, for example, will understand consumer attitudes toward Website usability as well as the attributes desired by consumers in their online buying experiences.

This will require more than human relations courses. It will require technologically integrated courses in most, if not all, of the business functional areas, as well as consumer behavior science taught in the context of information technology. Professors and administrators, as well as IT and strategic managers, must be ready for these changes. Steve Jobs wrote that ". . . technology is the easy part, the hard part is what's the product, who is the customer and how do you tell them about it." However, many IT employees believe the reverse, and many strategic managers are content to see technology as a "black box" to be marketed and used as any other product. Both views are ineffective and must evolve in order to produce the Renaissance individuals needed in businesses increasingly driven by customer interactions with technology.

Recommendations

With technology rendering virtually all business functional areas customer facing, many if not all employees require crossfunctional knowledge to perform optimally. To enable business schools to respond to this need, we provide the following recommendations.

First, business schools must restructure or, at the very least, integrate IT with other disciplines. They should focus on core strengths, such as the teaching of critical thinking, strategy, planning, and information theory and practice, as applied to the appropriate technology. When possible, new professors who bridge disciplines should be hired and offered joint positions when feasible. Existing professors may need to retool to varying degrees to maintain currency and meet these interdisciplinary and technology needs.

Second, business schools should resist the short-term urge to teach what is essentially vocational, skill-based education such as teaching support software suites. Skill-based training will be dominated by commercial and in-house training service providers who are able to offer commodity-like courses in a much more efficient and cost-effective manner. When such instruction is taught in expensive courses by highly trained professors, there is little value added and the perceived value of a university education is diminished. However, to match the pace and flexibility of environmental change and meet some skill-based needs, business schools should move faster to augment (although not replace) their programs with ancillary educational platforms such as CBT, Web-based, and distance learning.

Third, greater flexibility is needed in the design of major areas of study to match cross-functional business needs and entrepreneurial interests. Rather than simply allowing students to engage in crossdisciplinary scheduling, this change also will require an increased awareness of alternatives on the part of advisors and department heads. Over time, as the crossfunction-

al knowledge of faculty increases through hiring and adaptation, they also will begin to play a greater role in providing advice, through normal office hour interactions, regarding the best mix of course work.

Fourth, with faster and shorter information life cycles and time cycles of technological change, professors can no longer rely solely on the creation, review, and dissemination of scholarly research to remain current and to gain interdisciplinary knowledge. In addition, professors should share knowledge and information through new technologies in a fundamentally different fashion than they have \ in the past. For example, communities of scholars (which can also include corporate managers) are just beginning to develop and share emerging research online (e.g., MIT's e-commerce forum). Participation in these communities should be encouraged in order to maximize the timely exchange of knowledge and crossdisciplinary and collaborative needs. Also, online media aggregators and "notification systems" that select and collect current news and information on specific topics of interest could be used or even created by professors. Finally, e-commerce, technology management, and marketing textbooks should have substantial online components and supplements that are regularly updated and integrated across disciplines.

Conclusion

Business schools continue to have a niche that is unlikely to be filled by commercial vendors. Commercial training tends to be skill based, only occasionally engaging in training in managerial/strategic areas. To maintain this niche, business schools will have to offer meaningful integrative experiences and avoid being lured into focusing on the development of specific IT skills. At the very least, IT perspectives should be integrated with all functional areas, and IT students should be exposed more to content areas such as strategy, marketing, and finance. Current faculty members must receive support and incentives to become more interdisciplinary in both their research and teaching, and new faculty members with crossfunctional skills should be hired. Professors will need to adapt and integrate their expertise throughout the business school. Most important, the Renaissance professor will need to continuously learn and teach new concepts, often from outside his or her major field, to produce the graduates needed today.

REFERENCES

Applebome, P. (1999, April 9). Distance learning: Educators.com. *The New York. Times*, Technology Section, On-line Archives.

Earl, M., & Feeny, D. (2000). How to be a CEO in the Information Age. *Sloan Management Review, 41*(2), 11–23.

Forrester Research. (2001). Press resources [On-line]. Available: http://www.forrester.com

Gleick, J. (1999). *Faster:The acceleration of just about everything.* New York: Pantheon Books.

Grant, R., & Huston, T. (2000). *Structuring for e-commerce success: Integrating preliminary cases with theory.* Working paper. Irvine: Center for Research on Information Technology and Organizations (CRITO), University of California, Irvine.

Harris Interactive. (2000, July 24). E-commerce thrives in 2nd quarter, according to U.S. Bancorp Piper Jaffray and Harris Interactive's e-commerce score card [On-line]. Available: http://www.harrisinteractive.com

Jobs, S. (1999, September). Selling power [On-line]. Available: http:// www.sellingpower.com

Leonhardt, D. (2000, January 16). Business: At grad schools, a great divide over e-business studies. *The New York Times*, On-line Archives.

Millard, E. (2000, February 28). No more pencils, no more books. The Industry Standard [On-line]. Available: www.thestandard.com/article/display/1,111,12179.html

Modahl, M. (2000). *Now or never: How companies must change today to win the battle for Internet consumers.* New York: Harper Business.

Pharr, S. (2000). Foundational considerations for establishing an integrated business common core curriculum. *Journal of Education for Business, 76*(1), 20–23.

Rayport, J. F., & Sviokla, J. J. (1995). Exploiting the virtual value chain. *Harvard Business Review, 72*, November–December, 75–85.

Tapscott, D. (1998). *Growing up digital.* McGraw-Hill: New York.