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SOME CHALLENGES FACING LOGISTICS EDUCATION AT THE NEW MILLENNIUM

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Although the future of logistics looks bright as the new millennium approaches, logistics programs in higher education face significant changes and challenges. This article examines six challenges—three challenges facing business education in general and three challenges directly and uniquely facing logistics education. Five propositions about the future of logistics education are developed. For logistics education, particularly the traditional logistics programs, the years after the new millennium will be both the best of times and the worst of times.

The future for the logistics discipline looks very bright as the new millennium approaches. An increasing amount of anecdotal evidence exists indicating that logistics has moved from an operational to a strategic importance in many firms. More firms appear to see logistics as a critically important area to remain competitive in the new global economy. In addition, the business press appears to have an increasing awareness of logistics as more journals such as the *Wall Street Journal*, *Fortune*, and *Business Week* provide more coverage of logistics. Possibly the most concrete evidence is that logistics majors in business schools appear to be, along with information systems majors, in most demand for permanent positions and internships.

Unlike most areas in business, however, significant logistics programs are offered in very few business schools and in even fewer engineering schools. Although it has been estimated that roughly 500 universities and colleges offer logistics courses, the logistics major or concentration is available at relatively few schools (Saccomano 1996). With growing demand and limited supply of logistics graduates, existing significant programs in business

schools would appear to be positioned for future growth. In addition, the current and projected demand for logistics graduates would suggest that smaller programs are likely to expand and new programs would be developed. The purpose of this paper is to examine some of the major changes and challenges facing logistics programs in higher education and project how these forces will influence the nature and viability of logistics programs as we enter the 21st century. In the next section, three challenges and changes facing business education in general are reviewed with their likely implications on logistics highlighted. Next, three challenges more directly and uniquely facing logistics education are examined. In the next section, several propositions are presented which suggest a view as to the future of logistics education at colleges and universities in the United States. Finally, implications and conclusions are presented.

EXOGENOUS CHALLENGES

A number of the more important challenges facing logistics education in higher education arose from changes and threats facing business education in

general (Moore and Diamond 1995; Porter 1997). In other words, these challenges are generally external to and not unique to logistics programs. Included in these challenges are: (1) changes in the accrediting procedures and criteria of the International Association for Management Education (AACSB), (2) criticism that the "silo" orientation of business schools is no longer appropriate for solving today's business problems, and (3) claims that business research is too theoretical and without relevance.

Changes in AACSB Accreditation Policy

The AACSB is the premier accrediting agency for bachelor's, master's and doctoral degree programs in business administration and accounting. Standards for business administration were instituted by the AACSB in 1919. More than 300 of the business programs in the United States are accredited. The AACSB accreditation process is designed to promote excellence and continuous improvement in business programs (AACSB 1996-97).

In April 1991, AACSB members adopted new "mission-linked" accreditation standards and procedures for business administration and accounting that support institutional diversity in management education. The change in standards followed a study by the AACSB which found existing management curriculum too standardized and inflexible (Frankel and Lewis 1992). Porter (1997) recently observed that more diversity appears to be developing across business schools. Porter attributes, in large part, this move toward increased individuality among business schools and away from the herd mentality to the new accreditation standards of the AACSB.

Before the 1991 changes, accreditation was based on standards and procedures that emphasized compliance with a set of numerical input indicators and adherence to a curricular structure composed of a specified common body of knowledge. Faculty and administrators in traditional areas such as marketing and accounting could use AACSB standards to inhibit, if not prohibit, the introduction of new programs such as logistics. If one viewed the AACSB as a cartel manager, it was simply attempting to restrict, through "regulation," competition among its cartel members in many different areas, including innovation.

The new AACSB accreditation approach, which involves both self-evaluation and peer review

processes, places the focus on a school's clear articulation of its specific mission, and on its justification of the allocation of resources, processes, curriculum and programs to implement the mission. This change in the accreditation approach by the AACSB provides a great opportunity for some logistics programs to become a more significant component of their business school curricula, if not central components. In addition, it increases the probability of establishment of new logistics programs. The new accreditation process is characterized by the AACSB as a process which supports diversity in management education (AACSB 1994-95).

The main challenge to logistics educators is to ensure that all of the appropriate logistics stakeholders are involved in any strategic planning that takes place in business schools. Today, accreditation evaluation for a school is linked to its mission which is derived through a strategic planning process. The mission must be consistent with the mission of the university. Professional organizations, such as the Council of Logistics Management and the American Society of Transportation and Logistics, must be prepared to serve as resources and be involved in the strategic planning processes of universities and business schools. Strong external support is essential given that the internal support will likely not be as strong as needed because most business faculty earned their doctorates at universities which do not have logistics or transportation programs.

Industry Criticism of Discipline-Based ("Silo") Structures of Business Schools

Business schools and their faculty continue to be criticized for their disciplinary focus and their insulation from other parts of campus. The environment produced by the continuing strong influence of individual disciplines has been noted to produce little interaction between functional units either within the business school or with units outside of business school (AACSB 1996). Employers are wanting more of an interdisciplinary educational background for business school graduates. While universities have departments based upon disciplines, the real world has problems and processes involving multiple disciplines.

This challenge to business education has both positive and negative implications for logistics education. On the one hand, logistics is highly interdisciplinary in nature. One need only look at an

earlier definition of logistics by the Council of Logistics Management (1976) to realize this. Included in the definition are such functions as customer service, demand forecasting, distribution communications, inventory control, materials handling, order processing, parts and service support, plant and warehouse site selection, procurement, packaging, return goods handling, salvage and scrap disposal, traffic and transportation, and warehousing and storage. In fact, some might consider logistics to be so broad as not to be a discipline at all. Logistics is well positioned to thrive in an academic environment in which the focus is not on disciplines. Because of its interdisciplinary nature, logistics matches up better with normal business problems and processes than most other areas in business colleges.

On the other hand, anecdotal evidence exists which suggest practitioners and others perceive students educated in logistics as having too narrow of an educational experience (Armstrong 1996; Richardson 1997). Given that most logistics programs require their students to take all of the core business courses, capstone management courses, plus non-logistics courses in their major, this perception is wrong. It also creates a paradox of sorts. Logistics is considered to be too narrow by industry but too broad by many in the academic community to be considered a legitimate area of scholarship.

Industry Demand for Relevancy of Business Research

Research conducted by business faculty has been criticized for being too theoretical and without sufficient relevance to the "Real World" business environment. On the other hand, some research is highly relevant but lacks strong theory and fails to meet promotion and tenure standards. The ideal research meets both theoretical and applied standards. Industry is looking for the type of research which improves the practice of management and which can be converted into the core body of knowledge so students can improve the practice of business. Industry members are essentially asking about the impact, or lack of impact, of research conducted by business faculty (AACSB 1996).

On balance, this challenge to business education should have a positive impact on logistics programs. Logistics and transportation research tends to be more applied than research conducted in most other areas of business schools. A cursory review of the

top journals in the transportation and logistics area clearly indicates the emphasis on relevant and applied research. In fact, the journals in the logistics area are often discounted by faculty from other business disciplines because of this focus.

The quality and impact of the research in the transportation and logistics area can be strengthened, however. There is some degree of truth to the criticisms from faculty of other business areas that the research in the logistics area tends to lack adequate theoretical underpinnings and that the empirical constructs and empirical work lag the work in other disciplines. In addition, much of the research in the logistics area is a study of what is or what has taken place instead of focusing on what should be. An important question to address is how much influence has transportation and logistics research had on industry management practices.

ENDOGENOUS CHALLENGES

On balance, the previously mentioned exogenous challenges to business education suggest an opportunity for logistics curricula to assume a more prominent role in business programs. Involvement by the business or professional community will be required. On the other hand, some of the changes and challenges facing logistics are more internally oriented and unique to logistics programs. The three highlighted below are: (1) the rapidly changing and expanding expectations for graduates of logistics programs, (2) the implications of the small number of logistics faculty in business schools, and (3) the problem of recruiting students to logistics programs.

Rapidly Changing and Expanding Expectations for Graduates

The expanding and rapidly changing expectations for graduates of business programs are well chronicled. More challenging is what appears to be paradoxical demands for specialized technical preparation and, at the same time, for the skills and breadth of academic experiences required to survive and thrive in a continuously changing business environment (Moore and Diamon 1995). Designing a curriculum to prepare students with the right skill sets to be able to add value immediately to the firm and to succeed over the long run is a challenging and never ending task.

This challenge is even more difficult for faculty in logistics programs due to the greater emphasis on

information technology, more breadth in terms of functions, the somewhat undefined nature of the area, and the variety of educational backgrounds possessed by logistics practitioners¹. Furthermore, logistics is a rapidly changing area with demands and conflicting expectations not as prevalently found in more mature areas of business such as accounting or marketing. For example, as noted above, the logistics task in many firms has undergone an evolution from an operational to tactical to strategic orientation. Preparing students to meet the changing educational requirements suggested by this evolution, along with the curricular implications of development of the supply chain management concept, is very challenging to logistics educators (Murphy and Poist 1994; Aron 1997; La Londe 1990).

Risks Associated with Small Faculties

Although the logistics program at Penn State is the largest program in the nation, its faculty group is one of the smallest faculty groups in the Smeal College of Business at Penn State. The group of faculty associated with business logistics at Penn State also is absolutely small with about 10 faculty members. Most faculty groups at Penn State have double this number of faculty or more. Similar numerical relationships can be found at Michigan State University, Ohio State University, University of Tennessee, University of Maryland, University of Arkansas, Arizona State University, Iowa State University, and other universities that have significant programs in logistics. The relative and absolute small size of the logistics faculty produces several challenges for logistics programs.

The relative size of faculty in the logistics area creates political challenges which are constantly manifested in a variety of ways. Strong logistics programs can be and are attacked by faculty in weaker, traditional programs because of the sheer differences in the number of faculty. Curricular issues are decided by the faculty and these decisions usually reflect the relative political power of the faculty groups which is based upon the relative number of faculty. As the curricular programming becomes more customer driven, the importance of political power based upon faculty size will diminish.

The small absolute size of typical logistics faculty creates a different type of problem. In programs with a small faculty, the departure of one faculty member, particularly a senior faculty member, can have a substantial impact on the program. Many

senior faculty have, in addition to building a national academic reputation and relationships with key employers seeking logistics graduates, have strong political ties with college and university decision makers. It is no accident that numerous logistics faculty members eventually become college or university administrators. The exposure that a logistics program has because of its size requires that logistics faculty become politically skilled and more entrepreneurial than faculty in other areas. In addition, the logistics area emphasizes systems optimization and the ability to think in terms of the "Broad Picture" rather than a single function.

Problem of Recruiting Students to Logistics Programs

Despite the higher corporate profile of the logistics profession during the past 5-10 years, it remains largely unknown among students when they first enter college. This is quite in contrast to more traditional business disciplines such as accounting and marketing which are typically more well known.

In essence this means that the great majority of logistics students initially begin with another major and, only after taking an introductory course or having part-time job exposure in logistics, decide to switch majors. Other students find out about and become interested in logistics too late in their college programs (e.g., as seniors) to make it practical to change majors.

Adding to the recruitment problem is the fact that logistics is still portrayed by some in the business community in less than favorable terms. A good example is major business publications such as *Fortune* and the *Wall Street Journal*. While these publications have demonstrated an increasing awareness and coverage of logistics, they nevertheless describe the discipline as a "sinuous, gritty and cumbersome process," that "It is as dry as toast..." and that "It may not be cool. But it is flush with potential." (Henkoff 1994; Bigness 1995)

Certainly these views do not enhance the career image of logistics, nor are they likely to attract students to the field. Even more importantly, these perceptions ignore the fact that logistics has a strategic focus and not simply an operational one. Much needs to be done in this area to educate others as to the true potential of logistics in terms of its strategic and operational importance at both the micro and macro levels of the economy.

An important objective of any recruitment effort should be to increase the number of women and minorities coming into the profession. According to George Gecowets, executive vice president of the Council of Logistics Management, there has been a marked increase in the number of women entering logistics while minorities have been less visible (Saccomano 1996). This increase in women is reflected in the graduate and undergraduate enrollment levels of university logistics programs. For example, it has been reported that 45% of the 75 logistics graduate students at the University of Nevada-Reno are female, compared with none six years ago. Likewise, the undergraduate logistics program at the University of Maryland is reportedly approaching a 50-50 gender mix (Aron 1997).

Perhaps the real challenge regarding recruitment is how best to disseminate information about logistics career opportunities to potential students. By most accounts, the demand for college educated logisticians appears to far exceed the supply resulting in an availability of well-paying jobs and excellent career advancement opportunities (Richardson 1996). This demand/supply disparity is not a recent phenomenon, but rather one that has existed since the mid-1980s and is likely to continue well into the 21st century (Zinzer 1985). A highly promising approach to disseminating this "good news" is to target students as early as possible in their educational careers. Essentially this means no later than their freshman or sophomore year in college or junior college and possibly as early as high school.

PROPOSITIONS FOR THE FUTURE

On balance, the exogenous and endogenous challenges to logistics education suggest that logistics courses and programs should become increasingly important at the college and university level. These challenges should be viewed as opportunities for innovation and improvement, and ultimately must be addressed if logistics education is to reach its full potential as a major field of study. Although not analyzed in this paper, there is clear evidence that industry will have an increasing demand for graduates with interest and skill sets needed for the logistics profession (Zinzer 1985; Richardson 1996). A number of writers have stressed the fact that contemporary logisticians need a variety of skills to be successful. For example, Herron (1985) maintains that successful managers must be able to integrate interfacing, managerial,

and functional skills. Likewise, Murphy and Poist (1991) have empirically tested a "Business Logistics Management Model" which suggests that modern logistics executives must possess a combination of business, logistics, and management skills.

The changes and challenges addressed in this paper suggest that business programs now have greater flexibility to accommodate different programs and courses, such as logistics, under the new AACSB standards, and that industry criticisms of business education (e.g., research is too theoretical and the structure of business schools is based on disciplines) should favor logistics programs now in higher education. On the other hand, the relatively and absolutely small logistics faculties create real political problems for even the most successful and largest logistics programs. Likewise, attracting students to logistics and designing logistics curricula which provide students with the appropriate skill sets will remain a very challenging and never ending task.

The review of these challenges and changes suggests a number of propositions about the future of logistics education. These propositions tend to be supported by current trends and available evidence. The most important are discussed below.

Proposition #1: In general, logistics programs will become more customer driven.

Existing logistics programs, like all business programs, will become more responsive to industry needs. Several logistics programs have just completed a curricular and program restructuring in which industry was deeply involved. One example is the Supply Chain Management program recently initiated at Michigan State University. The AACSB's new accreditation requirements suggest that all business programs must be more responsive to the needs of the customer. Given the lack of internal political support for most logistics programs, this increasing awareness of the importance of the customer is a positive development.

Proposition #2: The scope of logistics will include a wider participation of disciplines.

The ever changing demands and broadening scope of logistics calls for wider participation of disciplines in logistics curricula. Logistics will likely become a

"virtual major" depending upon the types of skill sets being requested by the firms recruiting at a particular university. The logistics major will put together courses from cognate programs in a time frame and manner requested by corporations. Given the increasing technical underpinning of logistics, it is likely that more logistics programs will be jointly offered by business and engineering schools. This approach provides an alternative to an approach suggested recently as possibly the most effective way for a student to prepare for the logistics profession—an undergraduate degree in engineering in conjunction with a MBA degree (Cooke 1992).

Proposition #3: Increasing demand will be met primarily by more business schools offering more courses, and only secondarily by establishing new programs.

As the demand for logistics grows, universities will respond by adding a course in logistics for the first time or adding a course or two to existing courses. Developing new logistics programs, particularly in business schools, will be difficult given the political and budgetary environment for most business schools. The major exception to this rule occurs when the business or professional community intervenes by providing resources to restore courses or initiate programs. Students interested in a logistics major in these "new" programs most likely will have the option of taking courses in cognate areas but will have limited options within the traditional logistics curriculum. The efficacy of this approach to meet the expanding industry demands in the logistics area will depend upon the degree to which an administrative and faculty commitment is made to logistics education. Requiring a reluctant marketing faculty member or an operations management faculty member to teach a new course in logistics is not likely to develop a nurturing environment to grow an interest in logistics.

Proposition #4: Traditional disciplines and departments will attempt to adopt logistics as their own as demand for logistics increases.

The growth in industry demand for students interested in logistics will gain the attention of traditional areas in business schools, particularly areas of declining enrollments and excess faculty. As

logistics grows, it will become more attractive to the mainstream programs in business and their attempts to adopt logistics will likely increase. Although the customers will have more influence over the curriculum than in the past, it is less clear who will control the provision of the major. The logistics programs will move from an environment of being the unwanted stepchildren of business education to being prime candidates for acquisition by the traditional majors.

Proposition #5: The business community will play an increased role in the future of logistics education.

The corporate need for logistics talent has created a strong pull on universities to revise and upgrade existing programs and course offerings. This industry influence has been referred to as the "consumer pull theory of academic change." (Aron 1997) Many, if not most, of the curricular revisions and upgrades involve placing greater emphasis on supply chain management. In an even more dramatic fashion, the business community has stepped in to help restore courses or initiate logistics programs at the University of North Texas, Long Island University, the University of Northern Colorado, and the University of Nevada-Reno (Aron 1998). More will be said regarding potential business efforts to enhance logistics programs and curricula in the Implications and Conclusion section of the paper.

IMPLICATIONS AND CONCLUSIONS

The challenges and propositions presented in the paper have a number of implications for the academic and business communities. For those in the academic community (e.g., educators and administrators), the implications can be enumerated as follows:

1. Take advantage of the opportunities offered by the new AACSB accreditation standards to establish new logistics programs as well as strengthen existing programs and courses.
2. Stress the interdisciplinary nature of logistics as well as emphasizing problems and processes involving multiple disciplines.
3. Stress greater relevancy in logistics research as well as strengthening methodological and

theoretical underpinnings associated with this research.

4. Take an active and continuing role in preparing students to meet the changing educational requirements and skill sets desired by industry.
5. Foster relationships within the academic and business communities that will assist in creating, enhancing, and ensuring strong logistics programs and curricula.
6. Take a proactive role in recruiting students to logistics programs and attempt to target/inform students about job and career opportunities as early as possible in their educational endeavors.

This paper also has implications for those in the business community including employers, practitioners, and professional associations. Their efforts are particularly important in terms of providing activities and resources which strengthen logistics programs and curricula. For example, the business community adds "real world" relevance to

logistics programs by sponsoring speaker bureaus, scholarships, internships and co-ops, career days, job fairs, field trips, web site development devoted to career opportunities, and holding local meetings/annual conferences and subsidizing student fees for these events. Last, but certainly not least, the business community must continue to seek out and hire majors/graduates from logistics programs as well as making known their needs regarding curriculum design and course content.

In conclusion, the challenges and changes outlined in this paper suggest that the existing logistics programs are entering a time period which can best be portrayed by paraphrasing Charles Dickens' first sentence in the *Tale of Two Cities*. For logistics education, particularly the traditional logistics programs, the years after the new millennium will be both the best of times and the worst of times. In a positive sense, the growth in the demand for logistics education will likely continue for some time. In contrast, the degree to which traditional logistics programs will control provision of the logistics major and courses is much less clear and more subject to speculation.

ENDNOTE

¹George A. Gecowets, executive vice president of the Council of Logistics Management, noted that nine out of ten people who work in logistics today did not major in the field. See the article by Ann Saccomano "Higher Profile Needed," *Traffic World*, December 16, 1996, p. 42.

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