

Training for the Future

Schools worldwide develop new programs in supply chain management.

There is an increasing need for executives to be skilled in the art and science of supply chain management. Large companies are finding that it is not sufficient to assume that engineering, manufacturing or inventory managers will assimilate the skills needed to organize the agile and lean supply chains demanded by mass customization and globalization. They expect that a detailed and effective education in the theory and implementation of supply chain management will be required for the leadership and decision-making roles demanded by these trends.

As a specific skill set, supply chain management—also loosely referred to by many schools as logistics, although that term does not embrace the increasing scope of supply chain expertise—has been gaining importance at large companies for nearly half a century. More recently, it has become a major discipline and a key feature in the curricula of many business schools. Concentrations in supply chain management and logistics attract corporate sponsorships and help build close relationships among these schools and some of the world's leading companies.

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Many colleges are meeting this need by accentuating their supply chain management courses. Some are even changing the names of existing departments, from business management or transportation and logistics to supply chain management. Some of the more prestigious institutions doing so include U.S. universities such as Arizona State University (Department of Supply Chain Management), Penn State University (Department of Supply Chain and Information Systems), Michigan State University (Department of Marketing and Supply Chain Management) and the University of Cologne in Germany (Department of Supply Chain Management and Management Science).

Changing focus from engineering processes to problem solving

Some universities have added management and leadership skills to the traditional analytical focus on transportation and engineering studies. This has not been an easy change, since the engineering schools have traditionally stressed a quantitative approach—not the focus of the

newer supply chain curricula, which are just as likely to focus on change leadership, project management, teamwork, communications and globalization. The integration of these business skills is now accepted as the norm by most colleges. One of the most important skills a student learns, according to Chris Caplice, executive director of the MIT Master of Engineering in Logistics program, is to “find correlations and work the corridors.”

Most of the college programs concentrating on supply chain management are for graduate students. Business-school undergraduates receive an introduction to supply chain management theory, although relatively few schools offer a major in the subject. Many schools feel that undergraduate business majors have their plates full with such subjects as economics, statistics, quantitative analysis, sales, marketing, finance, manufacturing and human resources. Others find that after one year of introductory courses, students are ready for a supply chain specialization, usually combining this with an internship.

The University of Tennessee (UT) is one such college, with nearly 300 undergraduates taking a concentrated program in supply chain management. UT also offers advanced degrees and has executive programs in place in this discipline. Paul Dittman, director of corporate partnerships at UT, says that at a recent job fair, twice the number of companies (66 in total) were looking for supply chain and logistics graduates than for any other discipline. As Dittman says, “There was almost a feeding frenzy going for logistics grads.”

Other educators believe that they can teach supply chain studies most effectively at a graduate level, and, better still, to older graduates who are returning to school after gaining some experience in the workplace. At MIT's Sloan School of Management, instructors teach logistics only at an advanced level, although undergraduates get an opportunity to select electives in the subject. Caplice says that MIT's more experienced students have a basic understanding of the field and are enrolling to learn specific skills.

Of course, curricula are always evolving, and the general trend is toward problem solving, not just the mechanics of logistics. Many schools now teach a portfolio of supply chain strategies. Caplice says that MIT has adopted the European one-year post-grad course concept, since taking two or more years away from a career can be detrimental to a career path.

The new basics

The emphasis of the MIT Sloan curriculum is three-fold: know thyself, know thy team and know thy environment. Knowing yourself involves understanding your own strengths and weaknesses, and developing leadership skills and abilities. Knowing your team encompasses problem solving, working with others and developing relationships that will allow you to direct other people or participate as a team member. Knowing your environment means being able to assess and organize the particular structure you find yourself in. In relation to all, MIT Sloan provides a mix of skills, theory and experience—not just functional specifics such as inventory optimization and transportation control. The school's technology courses, like those in many other schools, strive to cover everything from the fundamentals to the cutting edge.

Many schools pay only cursory attention to current technology, preferring to concentrate on basic theory. Most agree, however, that technology advancements have



made the field of supply chain management what it is today. They stress that technology is an enabler, though often over-emphasized. Much of the technology deals with manipulating data and allowing the data to be presented in a variety of ways to many levels of an organization. Different software solutions accomplish this somewhat differently, so it is important to get a basic understanding of the principles, and later learn the specifics. Many educators believe closer collaboration with technology companies is needed, but that these companies are too focused on serving clients, and lack resources to devote to schools.

Educators at most schools contacted do not intend to make their students into database or programming experts. Caplice says MIT Sloan graduates “should learn enough not to be dangerous around databases.” Like most postgraduate students, these future managers should

understand how it all fits together, so they can become the problem solvers they are being educated to be. Today, good international skills and a solid understanding of human-resource issues are essential attributes for global supply chain managers.

Are the schools up to snuff?

There is some disagreement about how prepared schools are to meet the challenge of educating a new generation of supply chain executives. Many academics believe their schools have the expertise to do this right now, while some consider this an ongoing process. Janat Shah, professor of production operation management at the Indian Institute of Management, Bangalore, says, “The field of supply chain management is still ill-defined. On one side, there are the materials-management people, who understand they need to become broader in their scope. And those from the operations-management side realize operations encompasses not only what happens in a factory or plant, but also how goods and services are delivered to the end customer.”

Shah says that field management and operations management are now coming together, but that the logistics faculty still tend to look at the supply chain differently from the operations management faculty. He thinks that in Bangalore (now renamed Bengaluru) it may take another five years to stabilize the discipline's curriculum. For one thing, supply chain theory now includes a look at financial flows, and this focus is expanding the scope of many courses in the field.

The quality of the programs offered by any school may be dependent on the resources available. Some of the larger U.S. schools have managed to attract the top thinkers and theoreticians in the field, and have excellent teaching environments; others are less fortunate. Mohan Sodhi, senior lecturer in management at Cass Business School, part of London's City University, says, “Research indicates that universities do not or cannot cover all the needs of the industry—partly because universities do not know fully what industry employers want and partly because universities do not have the expertise to teach those topics.”

Others, such as Jishnu Hazra, associate professor of production and operations management at the Indian Institute of Management, find that business-school supply chain courses are relatively well tuned. Hazra attributes this to the presence of the Internet. “It is far easier today, compared to the situation 15 years back, to stay current on supply chain practices in industry,” he says.

Issues that will impact supply chain management can vary from country to country, too. For instance, trucking

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in India is 85 percent owner-operated, with just 10 percent of the vehicles equipped to accommodate containers. The transport infrastructure is nothing like that in Europe and North America. India's bad roads and monsoons lead to much higher rates of breakage and uncertainly, to say nothing of almost every state having a different tax situation, often causing drivers to take circuitous routes.

Most universities' business schools have executive programs, designed for experienced business managers and executives to gain an advanced education and reach their career goals, often requiring that they add supply chain management to their portfolio of skills. Generally, these students come with functional business experience, but needing instruction on specifics—supply chain management issues such as systems integration, e-business and supply-chain strategies, global network design and organizational structures for large-scale supply chain management.

Collaboration with industry

Collaboration with industry has become very important to schools. Although the theory and concepts must come first, partnerships with businesses help the academics understand how concepts become innovative ideas that can be realized in programs and services. Partnerships are a key part of most schools' supply chain curriculum. Through such relationships, the universities gain several key advantages:

- The schools have a ready supply of real-world problems for their students to get involved with both in the classroom and in the field.
- The professors stay current with industry trends, and get an overview of what is happening in the world of applied supply chain management.
- The professors gain consulting opportunities. These keep them current, and give them the opportunity to apply their knowledge in ways that result in scholarly articles for publication.
- The universities earn considerable funds from these companies, enabling them to hire more expert faculty and expand programs.

It should be noted that companies also benefit from these symbiotic relationships. They receive a ready stream of interns who generally are well-educated, with innovative theories and expertise and often considerable industry experience. The companies also gain high-level research and practical advice for a relatively small expenditure, without having to divert their already overtaxed supply chain resources.

A case in point: recently, MIT Sloan was able to involve its students in a project with athletic-apparel maker Reebok. Reebok had a sales and marketing campaign to manufacture, distribute and sell National Football League jerseys. With help from their professors, the students were able

to radically reorganize the inventory management system at Reebok. The project was published as a case study used at MIT Sloan and other schools.

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The schools are also well aware that studying theory does not constitute a complete education. As MIT's Caplice states, "Supply chain implementations do not fail because the optimization didn't run, but because you didn't get the right sponsors on board, or you didn't 'grease the skids' within the organization." For this reason, all of the major college programs in supply chain management include some practical fieldwork.

Students apply their knowledge in a variety of situations through internships and simulations. The unified-theory approach of many schools has been a success. Graduates are finding that they are equipped to deal with multiple industries. As Case's Mohan says, "Almost every industry has a supply chain of physical goods, and every industry has a service chain. In that sense, supply chain management is very much a cross-disciplinary area. However, when it comes to specifics, exposing students to a few specific industries and services can help them understand the similarities and differences." This exposure also helps them map their industry as part of the basic "know thy environment" stricture in business studies.

Another trend is the development of supply chain curricula in emerging countries, for whom sending students to Europe or the United States to study is not an option. In countries seeking to encourage global trade, such as Argentina, Chile, Hungary, Mexico, Taiwan, Thailand and Turkey, there are schools developing good reputations in supply chain management, often in partnership with schools in the United States and Canada. There are many other countries that have traditionally relied on global outsourcing, such as France, Germany, Japan and the Netherlands, which are also building a strong academic presence in the supply chain and logistics field.

It is becoming essential for these universities to develop programs that are on a par with those in Western schools. Their graduates will have to work with highly trained executives from many multinational companies, so their competence might spell the difference between success and failure of the new global networks of supply chains.

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