

# Forging better global supply chains

By David F. Morrill  
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The world may be getting smaller, but it's still not small enough when it comes to moving goods from one distant place to another. That's where James Bradley's expertise comes into play.

Bradley, a professor of operations management and information technology at the Mason School, is helping companies better manage their global supply chains and the complexities and risks inherent in longer, and outsourced, supply channels. With procurement times often exceeding six weeks for retail companies needing goods, and manufacturers needing raw materials to make those goods, it's difficult to make suitable ordering decisions when customer demand can vary drastically between the time when orders are placed and when they are received. Thus, postponing final ordering decisions as much as possible is a good strategy.

"If large retailers such as Wal-Mart, Target, and Dollar Tree can delay deciding where to ship goods, they can make much better decisions once the goods arrive in the U.S.," Bradley says. "A container arriving in the U.S. full of one item, for example, can be allocated among many locations in the proper quantities reflecting recent customer demand."

Making better decisions requires complex tools, and Bradley uses a mix of probability models, mathematical optimization, calculus and computer simulation to help determine the number of items companies should ship from overseas, as well as how to allocate those goods when they arrive.

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company a competitive edge."

Bradley says that accurately measuring the risk in global supply chains is difficult at best. Supply chain partners can go bankrupt, regions can experience natural disasters and socio-economic unrest, and the increased number of locations can fall prey to terrorism. And those are just for starters.

"This is one realm where our ever-faster computers and greater mathematical capabilities still do not allow us to comprehend these risks in an accurate fashion," Bradley says. "My research focuses on developing risk mitigation methods that don't rely on an exact computation of risk."

The evolution of global supply chains have created new terrain that must be managed by today's business professional, and Bradley is at the forefront of understanding and negotiating that terrain. He also encourages students to discover supply chain management.

"Given recent developments, supply chain management is an exciting, vibrant field," he says. "Unfortunately it's less visible in newspapers and magazines than fields like finance, marketing, and accounting."

Bradley is open to talking with anyone who might want to start a career in supply chain management -- another example of how the strongest links can originate in the Mason School.



A large part of supply chain management, according to Bradley, is balancing incoming flows with customer demand. Unfortunately, both factors, especially the latter, can be uncertain. "The types of models that I work on allow companies to do a better job at both containing costs and increasing customer satisfaction," he says.

Bradley sometimes laments that business people take the availability of goods for granted. "The reality is that many companies have failed financially because of supply chain shortcomings," he says. "Having the right goods available more often than your competitor, while not overbuying, gives a

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