Today’s “flattened” world has resulted in significantly more complex supply chains, where technology rules and changes in the global economy happen at warp speed.

Among the emerging trends that are worth watching: Further reshoring of manufacturing of high value, customized products and the growth of rapid prototyping; and Big Data analytics driving decision-making and improving supply chain operations by effective integration of procurement, production and distribution functions.

At Clarkson, our programs — whether at the undergraduate, graduate or executive level — incorporate the latest trends and technologies into the curricula so we can continue to develop professionals who are change-makers, metrics-driven and cross-functional thinkers. Leaders who understand how each process works and, most importantly, how to integrate each function into the overall supply chain system for superior performance.

In this issue of Linkages, three industry leaders share their perspectives on how minimizing risk, employing effective sourcing strategies and matching supply and demand is a complicated balancing act that requires planning, flexibility and strong partnerships.

Clarkson alumna and Board of Trustees Vice Chair Jean Spence ’79, Executive Vice President of Research, Development and Quality at Mondelez International, examines ensuring quality along the supply chain; alumnus Mark Frahm, ’89, ‘05, Executive Sourcing Leader for GE Oil & Gas, addresses effective sourcing strategies, and School of Business Leadership Council member Michael Prado, Vice President and Chief Procurement Officer for Stanley Black & Decker, discusses supply chain risks and mitigation strategies (p. 2-3).

The reputation of our faculty continues to grow as they attain positions of leadership in national and international professional associations, are honored with awards and serve as invited speakers at academic conferences and before industry leaders (p. 4-5). At the same time, they continue to publish widely in a variety of high-quality journals in the field (p. 6-7).

Finally, we would like to introduce and extend our welcome to Professor Dayle M. Smith, new dean of the Clarkson University School of Business (p. 8). Dean Smith brings with her more than 20 years of leadership experience in higher education. An expert in strategy, team-building and group effectiveness, leadership, corporate culture and service learning, Dean Smith has authored more than 25 books and numerous articles.

We hope you enjoy this issue and welcome your feedback (mahmoodi@clarkson.edu).
Managing Today’s Global Economy

In the 21st-century economy, disruptions in the global supply chain can wreak havoc for multinational corporations that depend on suppliers around the world. It can hurt the bottom line, and has the potential to inconvenience or even injure thousands of consumers.

The disruptions may arise from many quarters. It could be a tsunami in the South Pacific or political unrest along the Korean Peninsula that halts production or stirs turbulence in international shipping lanes. It could be the sudden financial collapse of a trusted sole-source supplier. Or it could be the adulteration of hamburger with horse meat in the United Kingdom.

“It’s a huge challenge,” says Jean Spence ’79, executive vice president of research, development and quality at Mondelez International, and a member of Clarkson’s Board of Trustees. “There are potential hazards out there, and you need to have risk-mitigation procedures in place. But there are things you can’t anticipate, so knowing your suppliers, and verifying their quality systems, is the most important thing you can do.”

For Spence, ensuring quality along the supply chain for the $35 billion food products company — the parent company that formed from the spin-off from Kraft Foods — is essential in a world where manufacturers seek materials from suppliers around the world to make products they hope will satisfy their customers and turn a profit.

Analyzing the Risks

Michael Prado, vice president and chief procurement officer for Stanley Black & Decker, rides herd on his company’s $6.5 billion supply chain, which winds throughout Asia, Europe and the United States. His supply chain team, with about 300 employees in 12 countries, remains vigilant to the shifting winds that can affect international commerce in the blink of an eye.

His team analyzes risk on many levels — product quality, human resource issues, supply chain disruptions, a supplier’s financial health and environmental issues.

“When the telephone rings, and you learn that a tsunami has hit Japan, or there is turmoil in Korea, or flooding in Thailand, you need a well-defined risk management plan to assess the situation,” says Prado, who serves on Clarkson’s School of Business Leadership Council. “And that approach requires rigor and discipline.”

Stanley Black & Decker, for example, has several suppliers in South Korea. When tensions rose in April between North and South Korea, his department developed a report that analyzed the risks associated with the situation. Within the region, South Korea was a primary risk, with Japan and northern China deemed secondary risks.

The report analyzed each supplier, noted the potential impact if the company could no longer provide the product, and suggested alternative suppliers. It also provided direction for follow-up steps: a review of current inventory, contingency plans for shipping routes, and the development of contingency plans for key suppliers.

In some cases, Stanley Black & Decker had dual sources for the components, and alternative sources lined up. But some came with a price: a U.S. provider for one component would cost the company 30 percent more.

Critical partners can fail as well. Prado recalls the financial struggles of an overseas supplier that provided a leatherette package that cost less than $2 for a combination wrench set.

To keep the supplier in business, Prado says, Stanley Black & Decker negotiated an agreement to invest capital in the company to save it from going under.

“`If we hadn’t reacted quickly enough, we’d have to develop new packaging or find a new supplier,” he said. “And there was approximately $20 million in annual sales volume at stake.”
Quality Counts
The quality of products that Mondelez International uses in its processed-food business is a key to its continued success in over 150 countries around the world. With prices relatively low compared to transportation costs in the food sector, many of Mondelez's products, such as Oreo cookies, are made in the regions where they are sold. Spence's department develops the products, processes, packaging and specifications for the products, and then has its laboratories sample the products to make sure the ingredients are up to snuff.

One analytical subsidiary, Reading Scientific Services LTD, also analyzes products for non-competing companies and government regulators. In 2013, Reading was called in by the United Kingdom to investigate revelations that horse meat was found in other companies' products sold as frozen beef burgers in Irish and British supermarkets. While the meat was still safe, it revealed a breakdown in the supply chain.

"Once they discovered horse meat in the United Kingdom, companies were all getting their beef analyzed and issuing recalls," says Spence.

"You can't analyze every raw material for every possible contaminant, so you have to make sure you know your supply chain, and know your suppliers," adds Spence.

Weighing the Costs
Deciding where to source manufacturing operations depends on myriad factors.

Clarkson alumnus Mark Frahm '89, '05, the Texas-based executive sourcing leader for GE Oil & Gas, oversees the supply chain that supplies major sourcing operations supporting manufacturing for the drilling industry on six continents. GE requires state-of-the-art componentry, and it needs international supply partners upon which it can rely.

"We don't just parachute into a country," says Frahm. "We vet the suppliers to make sure their quality systems are up to GE standards. We take each supplier on its own merit."

Frahm needs to keep an eye on the total cost of the process, which includes the cost of production, transportation and the additional management oversight that is needed in some overseas locations.

"We do detailed Make vs. Buy analysis; as part of this we compare higher cost supply or manufacturing against best cost country supply and manufacturing," says Frahm. "But you still need to do a total cost analysis. It might seem more lucrative to make a product or component in China rather than, say, Houston where wages are substantially higher, but you also need to have a team on the ground in China, which adds to the cost."

The bottom line, says Frahm, is if a company wants to obtain lower cost goods, then risk must be mitigated and safeguards must be put in place to ensure that the product meets the quality standards of the company. There are also issues related to working conditions and safety for employees at GE suppliers. GE suppliers are required to comply with applicable laws concerning safety, health and working conditions. However, GE Suppliers are also required to undergo a very stringent supplier approval, qualification and audit process that requires the suppliers not only to meet local requirements, but adhere to and enforce the GE integrity and other requirements and standards as well.

"You have to manage all of that," he says. "In the end, you look at a product and decide if it would be best to produce in a lower cost country like China rather than in a higher cost country, where you can get a bigger bang for your buck. If you are willing to take more risk, and have the processes to mitigate the risk and ensure quality and compliance, and the price point is low, you better have someone on the ground to ensure it."

Mark Frahm '89, '05, Executive Sourcing Leader for GE Oil & Gas.
Prof. Chester Xiang Named LINKS Fellow

Clarkson University School of Business Assistant Professor Chester Xiang was one of 11 faculty members across the country designated a LINKS Fellow and elected to the LINKS Hall of Fame for 2013. This honor recognizes individuals using and supporting LINKS management simulations for more than five years.

LINKS Supply Chain Simulation models an electronics device firm, which must manage its supply chain from sourcing and procurement, to manufacturing, logistics and distribution, as well as pricing and after sales service. Professor Xiang incorporates the LINKS simulation into his advanced undergraduate and graduate level supply chain courses.

“There are three major benefits of running LINKS simulation in an advanced level supply chain course.” Professor Xiang says: “The first benefit is to let students apply their quantitative and qualitative supply chain training to this semester-long, large-scale simulation, and get used to communicating in supply chain terminologies.”

“The second is to enhance students’ understanding of the challenges of making optimal decisions with restrictive resources. For any LINKS decision, there is always tradeoff(s) to be considered. The third benefit is to grasp the competitive and dynamic attributes of supply chain decisions. The simulated competition is between the teams, not the computer. Even if you are making the ‘optimal’ decisions, you still have to deal with the uncertainty brought by competitors.”

Prof. Farzad Mahmoodi Leads Seminars for Industry Leaders

In May of this year, Professor Farzad Mahmoodi, Joel Goldschein '57 Endowed Chair in Global Supply Chain Management, conducted a two-day seminar titled "World-Class Supply Chain Management" for 60 associates enrolled in the Stanley Black & Decker Leadership Program (SLP) in New Britain, Conn.

The SLP features a 24-month, competency-based development curriculum focused on emerging talent, and serves as the primary leadership development vehicle for newly hired, high potential associates at Stanley Black & Decker. The program is designed to arm emerging leaders with the core competencies and leadership behaviors endorsed by the Stanley Black & Decker Executive Team and demanded by the competitive, global marketplace. In June, Professor Mahmoodi extended delivery of the seminar leveraging web-based resources to several SLP participants deployed in Asia. This session marked only the second global deployment to date.

In June, Professor Mahmoodi also conducted a seminar for manufacturing executives titled “Emerging Trends in Strategic Supply Chain Management,” at Clarkson’s Beacon Institute (Beacon, N.Y.), sponsored by the Council of Industry. The Council of Industry has been the manufacturer’s association for the Hudson Valley region of New York state since 1910. The council’s mission is to promote the success of the member firms and their employees, and to contribute to the success of the Hudson Valley Community by providing state-of-the-art management training for its members.

13th Annual Supply Chain Executive Seminar Held

Our 13th annual on-campus program was held August 6-9, with 35 participants attending from 15 states and 15 companies, including IBM, Toyota, Stanley Black & Decker, Lockheed Martin, Corning, Lutron Electronics, Assa Abloy, Car-Fresher Corp., Raymond Corp., Emtak, Sargent Manufacturing, Medeco, Klein Steel, Pemko Manufacturing, and Allan Chemical Corporation.
Profs. Mahapatra and Mahmoodi co-chair Manufacturing and Operations Track at POMS Annual Conference

Last May, the 24th annual conference of the Production and Operations Management Society (POMS) was held in Denver, Colo., where more than 1,000 researchers from some 50 countries gathered together. They discussed a wide variety of topics across several tracks. Clarkson University’s Santosh Mahapatra, Associate Professor of Operations and Information Systems and Professor Farzad Mahmoodi, the Joel Goldstein ’57 Endowed Chair in Global Supply Chain Management, served as the track co-chairs of Manufacturing Operations Track.

The track had 16 sessions, each dedicated to a specific theme such as inventory management, production planning and scheduling, advanced manufacturing systems, lean manufacturing and six sigma, facility location and network design, contracts in manufacturing supply chain, and strategic supplier management. There were a total of 62 paper presentations, as well as two panel sessions.

The panel sessions discussed relevant issues in Manufacturing Supply Chains. The first panel session, “Is Lean Six Sigma relevant for the 21st Century Manufacturing,” featured Professor Yavuz Bozer and Professor Wallace Hopp (both from the University of Michigan), Professor Morgan Swink (Texas Christian University) and Professor Peter Ward (Ohio State University). The discussion highlighted how the Lean and Six Sigma practices have evolved over a century of development. The discussants suggested the need for treating Lean and Six Sigma as complements to derive continued benefits, noting that the organizations implementing them as two competing parallel programs often run into problems.

The second panel session, “Emerging Challenges in Manufacturing Supply Chain – An Expert Panel’s Perspective,” included Professor Steven Melnyk (Michigan State University), Phil Carter (Arizona State University) and Barbara Flynn (Indiana University) as discussants. They identified responsiveness, security, sustainability, resilience and innovation as the key demands on 21st century supply chains and emphasized that firms must develop necessary capabilities to meet these demands.

Prof. Dennis Yu Delivers Presentation for Retail Operations Management Track

Also at the POMS conference, Clarkson School of Business Associate Professor Dennis Yu presented his research on applying behavioral operations in traditional retail supply chain management for the Retail Operations Management Track. This is a joint research project with Professor Julie Niederhoff (Syracuse University) and Professor Almula Camdereli (Georgetown University). Professor Yu’s work presents a new trend in retail operations management and provides insights through a behavioral study using measures of satisfaction, willingness to pay and commitment to the ideal item.

Prof. Cecilia Martinez Elected to SEMS Board of Directors

Clarkson School of Business Assistant Professor Cecilia Martinez has been named to the Society of Engineering and Management Systems (SEMS) board of directors.

SEMS is the society within the Institute of Industrial Engineers (IIE) that seeks to advance the state of engineering management practice and research.

Prof. Martinez has been active within the organization, serving on committees, including the Content and Blog Committee, and the Student Committee. In 2011, she won the SEMS Best Paper Award in Engineering and Management at the Industrial Engineering Research Conference.
Supply Chain Management
Related Publications (2012–forthcoming)

(Clarson Faculty Members are Noted in Bold)


Global Business Experience Enhances Student Learning

In May, 2013, Clarkson School of Business Instructor Bill MacKinnon took 13 students, including four Global Supply Chain majors, on a 19-day study abroad trip to Southeast Asia, with stops in Singapore, Kuala Lumpur, Penang and Bangkok.

The purpose of the trip was to study business practices in Asia in order to help prepare students to enter the global market. The group visited both small local businesses, including a tropical fish farm in Singapore and a chocolate factory in Kuala Lumpur, and large multinational businesses such as TE Connectivity, SCI Sanmina and IBM.

As part of their tour, the group visited an automated distribution center of TE Connectivity in Singapore. Supply chain management was also the focus for visits to a DB Schenker distribution center in Penang, and Somboon Advance Technology in Bangkok. Other visits included a fruit farm in Penang, and a pewter manufacturer in Kuala Lumpur.

Throughout the trip, concepts such as Lean, Six Sigma, Kanban and continuous improvement kept arising, reinforcing the concepts students are taught in the Global Supply Chain Management curriculum at Clarkson.

References:


Prof. Dayle M. Smith
Named Dean of the Clarkson School of Business

Dayle M. Smith assumed leadership of the Clarkson School of Business effective July 1, 2013.

An inspirational leader, educator and prolific author, Dean Smith brings a collaborative vision and proven record of successfully supporting innovation and team-building experiences across departments, universities and international borders.

An expert in leadership, team-building and group effectiveness, corporate culture and service learning, Dean Smith most recently served as a professor of management at the University of San Francisco’s (USF) McLaren School of Business, where she held a number of leadership roles during her 20-year tenure.

Dean Smith has authored more than 25 books and numerous articles.

In 2010-2011, she served in Hong Kong as a member of a senior Fulbright scholar team working with local universities to shape a nationwide educational transformation initiative. In 2008, Dean Smith was awarded the USF’s University Service Learning Award and was a finalist for the national Ehrlich Award.

“The Clarkson School of Business has all the elements in place to develop 21st century business leaders: a first-rate faculty, a commitment to global learning, a strong alumni network, and nationally ranked top-20 programs in Supply Chain Management and Entrepreneurship.”

— Dean Dayle M. Smith

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