Managing Global Supply Chains in an Uncertain World

In recent years, manufacturers, distributors, retailers/e-tailers and logistics service providers have utilized innovative technology to drive a new wave of productivity to meet customer requirements.

Yet despite these advances, they face new challenges in light of recent shifts in the political landscape — from rumors of renegotiated or scrapped trade agreements, and the possibility of new border adjustment taxes and import tariffs to potential conflicts with major trading partners, fluctuating currency exchange rates and changing customer fulfillment requirements.

In this volatile environment, the impact on global supply chains is particularly significant. For example, it would not be improbable for component parts and finished goods to be stranded with little warning. In the longer-term, the rising costs of such operations could negatively impact the U.S. market, while slowing exports due to retaliatory protectionism and tit-for-tat measures from other governments.

Such an environment would certainly promote more local-for-local manufacturing and supply chain operations. This could mean more plants in the U.S., but with few new jobs considering the desire for heavily automated processes and lower production volumes. Clearly, supply chain operations will be even more challenging to optimize and manage than before.

The good news is that the emerging landscape holds opportunities to enhance the competitiveness for companies with the ability to respond to changes quickly.

At Clarkson, our supply chain management program incorporates the latest supply chain trends into the curriculum so we continue to develop leaders who are change-makers. The program’s focus on reinventing supply chain strategy, redesigning supply chain networks to pursue the selected strategy, applying lean principles to processes to ensure efficient operations before automation could prove invaluable in the current unpredictable environment.

In this issue of Linkages, you can read about our transformative educational experience for students, as well as our faculty’s pioneering research and leadership in their respective fields; including timely research on the role of nonverbal communication in cross-cultural negotiations (p. 2), a real-world, student learning opportunity through a unique corporate case competition (p. 4), our graduates’ 96% placement rate (p. 5), as well as faculty achievements and awards (p. 6-7).

We hope you enjoy this issue and welcome your feedback (mahmoodi@clarkson.edu).
Be Careful How You Say It
Understanding Nonverbal Communication is Key to Success in Cross-Cultural Negotiations

The power of communication.

In the world of business negotiations, a skilled communicator always has the advantage. Successful negotiators know how to get what they want without giving too much away. They also understand that in the language of negotiation, what you say may not be as important as the way you say it.

“Nonverbal communication is the driver of relationships,” says School of Business Assistant Professor Zhaleh Semnani-Azad. “People pick up subtle cues from tone of voice, facial expression and posture and that significantly influences how they interpret and respond to what someone is saying.”

Today’s companies rely on complicated global supply chains to produce and distribute products to consumers worldwide. Sourcing, manufacturing and logistics specialists must be able to negotiate successfully with business partners across the globe—from suppliers and manufacturers to third-party logistics providers—to get what they want, where they want it, on time and on budget.

But managing cultural differences and reading nonverbal cues correctly across cultures can be tricky. And the fallout from misunderstandings for a company can be significant—from delays to loss of money or contracts.

Professor Semnani-Azad examines the role of nonverbal communication in cross-cultural interactions and negotiations through the lens of cultural theory. Her interests lie at the intersection of organizational behavior and psychology.

Some nonverbal communication is universal. But conflicts can and often do arise because negotiation styles differ and because body signals often mean different things in different cultures and so are easily misinterpreted.

“Negotiation is very interdependent and combines a series of cooperative and competitive tactics,” says Prof. Semnani-Azad. “Negotiators need to build trust and develop relationships through cooperative behavior. At the same time, negotiators improve their own economic gain by engaging in...”

Professor Semnani-Azad Receives Research Grant

Prof. Semnani-Azad and a colleague from Carnegie Mellon University, Robotics Institute recently received a three-year, $789,945 research grant from the Foundational Science Research Unit of the U.S. Army Research Institute for the Behavioral and Social Sciences. The researchers will conduct laboratory and online experiments on diverse teams to understand group conflict.

Prof. Semnani-Azad was appointed to the editorial review board for the Negotiation and Conflict Management Research Journal (NCMR). She teaches Negotiations and Relationship Management and Strategic Human Resource Management.

Prior to joining the Clarkson School of Business in 2015, Professor Semnani-Azad was a visiting scholar at the Robotics Institute at Carnegie Mellon University where she conducted research as part of the Multidisciplinary University Research Initiative (MURI).
competitive behavior. Effective communication is crucial to the successful implementation of the cooperative and competitive strategies.”

“Negotiators who are attuned to the display and meaning of the nonverbal communication of others, and are strategic in the employment of their own nonverbal cues, have a definite advantage.”

That’s where her research comes in.

In one study looking at east-west differences, Prof. Semnani-Azad and her colleagues videotaped a role-playing negotiation involving Chinese and Canadian students. The researchers analyzed six categories of behavior: posture, head movement, hand movement, eye gaze, facial expression and the rate at which participants fell silent or kept talking.

While many of the nonverbal cues were used by both groups to convey the same meanings, there were some significant differences that affect negotiating styles. For example, when projecting dissatisfaction, Chinese participants often leaned back and made frequent eye contact. These are body signals that can easily be misinterpreted as positive and laid back by westerners. The Canadian participants, on the other hand, averted their eyes to express negativity and were likely to sit up straight to assert dominance while the Chinese negotiators used that same posture to display acquiescence.

While Prof. Semnani-Azad looks at prototypical behavior, she is quick to point out that there are always differences within cultural groups. “That’s why stereotyping can also lead to conflicts and miscommunication.”

For companies that rely on the smooth execution of their supply chains, training employees to raise emotional and cultural intelligence is a smart move. “It’s really crucial for our global working world,” says Prof. Semnani-Azad. “When people start dealing with people from other cultures it immediately raises anxiety. But as understanding grows and interactions become more frequent, anxiety diminishes and confidence develops.”

A New Model

The Effects of Price Pressure on Innovation Sharing

Supply chain literature suggests that applying price pressure to strategic suppliers is penny wise and pound foolish. Short-term savings often mean higher costs down the line as coercive pressure sows supplier resentment, which translates into a reduction of quality and innovation sharing.

But is this always the case?

New ongoing research by Assistant Professor Usman Ahmed and Professor Farzad Mahmoodi suggests that applying price pressure to a company’s suppliers does not always lead to negative consequences; rather, the effect of price pressure on innovation sharing ranges from positive to neutral to negative.

“As products mature, companies begin to experience price pressure from end consumers,” says Professor Ahmed. “The question is how much of the price reduction should be passed on to the suppliers.”

The pair studied 300 medium- to large-sized, U.S.-based manufacturers. Their results shed new light on how suppliers respond to price pressure.

They found that the supplier’s response to price pressure from the buyer depends on the buyer’s awareness of the supplier’s cost structure, the relationship value for the supplier, and a perception of equity. “So in many cases, price pressure did not adversely affect innovation sharing or the relationship between supplier and buyer,” says Prof. Ahmed.

The preliminary findings were presented at the Decision Sciences Institute’s annual conference in November 2016.
Corporate Connections
Goodyear's Case Competition Provides Real-World Learning Opportunities

At the Clarkson School of Business, students benefit from the strong corporate partnerships forged by the school and its faculty — from the development of new cases and curricula to on-campus corporate events, competitions and lectures that provide professional mentoring and networking opportunities.

Last fall, for the second year, Goodyear Tire & Rubber Company returned to campus for a competition designed specifically for Clarkson students to find solutions to an actual supply chain challenge faced by the company. Goodyear raised the stakes by offering $10,000 in student scholarships and hosting a recruiting event.

Dubbed “Goodyear Day,” the October 28, all-day event featured a morning presentation, “Strategic Sourcing at Goodyear & Information Session,” delivered by Corey Yon, Sr. Category Manager, Synthetic Rubber at Goodyear, an informational and recruiting booth staffed by Goodyear, followed by the case competition.

Prior to the event, nine student teams (four graduate and five undergraduate) submitted their analysis and recommendations related to a real supply chain case developed by Goodyear.

For the competition, the teams were asked to reconstruct Goodyear’s North American supply chain and consider cost savings, supply security, and diversity of the supply chain — all within the constraints and information provided through the case scenario. The challenge centered around sourcing, transportation and distribution of polymer material from overseas suppliers to five U.S. production facilities scattered across the country.

Six teams were selected to present at the competition. Each team was allocated 15 minutes to present their findings to a panel of Goodyear executives.

But selecting both a graduate and undergraduate winner proved difficult for the manufacturing giant’s supply chain experts.

“It was rewarding to see the amount of thoughtful work that went into each case study as well as the level of critical thinking ability displayed on a difficult ‘real life’ situation,” said Corey Yon who also served as one of the Goodyear judges.

After careful deliberations, two teams, one graduate and one undergraduate, were selected as the winners and received $5,000 each.

Wenting Xu and Claire Liu were the undergraduate winners, while MBA students Jeremy Nelson and Taylor Gedig won the graduate competition.

“It was challenging in that there was a seemingly infinite number of possibilities of how you could get materials to production facilities,” says Jeremy. “We had the option of choosing any combination of three suppliers in Brazil, Poland and Korea, but no one supplier could have more than 70 percent of the supply. The material could be shipped to five U.S. ports but must make it to all five production facilities. It's a massive amount of information and a number of variables that must be factored in. And there were other caveats thrown in — from port weight limits to supplier litigation.”

The two managed to compress what amounted to a month’s worth of work into a shorter frame of time. They created multiple spreadsheet models, each with the slightest iteration, and then boiled all these insights down to a 15-minute PowerPoint presentation.

“I’m incredibly thankful for the opportunity and proud of the work that Taylor and I did,” says Jeremy. “It made for a real proving ground in a boardroom environment. It was a great experience.”

Graduate team winners Jeremy Nelson and Taylor Gedig (center) after presenting their winning case for the Goodyear Supply Chain Case Competition (with Joseph Thomas, Commodity Lead and Corey Yon, Senior Category Manager from Goodyear.)
Supply Chain Management Graduates Secure Jobs at Top Companies

For any program, there are many different success indicators. But job placement is certainly an important one,” says Farzad Mahmoodi, Joel Goldschein ’57 Endowed Chair Professor in Supply Chain Management and director of the global supply chain management (GSCM) program. “When your graduates are hired by some of the nation’s premier employers year after year that is certainly an indicator of great success.”

The GSCM program at Clarkson is one of the flagship programs of the School of Business. For 14 years, U.S. News & World Report has ranked Clarkson’s program among the top-20 programs of its kind in the country.

Clarkson has numerous faculty teaching in the GSCM area; it is also the largest undergraduate major in the School of Business. Students majoring in Engineering & Management can also pursue a concentration in GSCM; while all MBA students — in Potsdam, the Capital Region Campus and online — are required to take a supply chain course. “Students can also elect to take the GSCM track in the MBA programs,” says Professor Mahmoodi. “In fact, it is the most popular track in our graduate business programs.”

The supply chain management curriculum at Clarkson employs a systems approach to integrating business functions, such as logistics, inventory management, information systems, and negotiations/partnership management.

“The goal is for students to understand not only discrete functions but to develop ‘big picture’ thinking and knowledge of systems optimization,” explains Prof. Mahmoodi.

And the approach works. “We’re known as a supply chain school so we attract certain types of students who excel here,” says Prof. Mahmoodi. “We have a great reputation in the field, close relationships with industry and a strong alumni network. This means our students secure great co-ops, internships and permanent positions after they graduate.

Clarkson Among Top Schools for Practice-Centric Operations Research Publications

The Rothkopf Rankings have featured Clarkson among the top schools in the U.S. for contribution to operations research practice literature. Clarkson was honored in three categories related to visibility, yield and impact.

Clarkson was ranked 19th among U.S. institutions for its “yield” score for practice-based publications. Yield records the proportional contribution of an institution’s authors to practice-centric publications.

In the visibility category, Clarkson placed 23rd based on the number of operations research articles and columns published in the academic journals Interfaces and Operations Research.

Clarkson also was ranked 25th for “academic yield,” which is the proportion of an institution’s academic contribution to operations research articles on practice.

Published in Interfaces by the Institute for Operations Research and the Management Sciences (INFORMS), the Rothkopf Rankings assess the activity of universities in the production of practice-centric operations research between 2009 and 2015.

Companies that Have Recently Hired Our Students Include:

– Amazon
– Caterpillar
– Corning
– Coupa Software
– DuPont
– General Dynamics
– GE
– GM
– Goodyear
– IBM
– Lockheed Martin
– Target
– Telus Communication
– Timberland
– Toyota
– United Technologies

TOP 15 Best Career Placement
Princeton Review 2016

96% Placement Rate
A paper co-authored by Associate Professor Dennis Yu has been accepted for publication in a forthcoming issue of the European Journal of Operational Research. “Impact of Supply Chain Power and Drop-Shipping on a Manufacturer’s Optimal Distribution Channel Strategy,” considers a dual-channel supply chain in which a manufacturer sells a product through a conventional retail channel and an online channel.

Professor Yu and Assistant Professor Chester Xiang’s article, “A Manufacturer’s Production and Pricing Strategies with a Salvage Channel,” which appeared in the International Journal of Production Research in 2017, examines a manufacturer’s production quantity and pricing decisions when the manufacturer has an opportunity to sell surplus inventory through a salvage channel.

Research related to supply chain integration by Professor Weiling Ke and two co-authors was recently published in the Journal of Operations Management. The article, “The Configuration Between Supply Chain Integration and Information Technology Competency: A Resource Orchestration Perspective,” is based on a survey of 196 firms in China and provides the first empirical evidence for the existence and nature of interrelationships between multiple components of supply chain integration and IT competency and their effects on company performance.

Professor Ke, Assistant Professor Na-Eun Cho and Assistant Professor Bebonchu Atems recently had their paper, “How Does Electronic Health Information Exchange Affect Hospital Performance Efficiency? The Effects of Breadth and Depth of Information Sharing” accepted by the Journal of Healthcare Management.

Professor Farzad Mahmoodi, Joel Goldschein ’57 Endowed Chair in Supply Chain Management has recently co-authored two journal articles: “Quality Assurance Laboratory Planning System to Maximize Worker Preference Subject to Certification and Preference Balance Constraints” to be published in Computers & Operations Research, and “Influence of Supply Chain Management Initiatives on the Basic Drivers of the European Manufacturers Profitability” to be published in the Journal of International & Interdisciplinary Business Research.

Professor Mahmoodi was also the recipient of the 2016 Professor of the year — MBA Module, which is awarded to the best professor in the MBA program by selection of the MBA students.

Professor Mahmoodi and Associate Professor Michael Wasserman led a Supply Chain Excellence seminar for managers and executives at ASSA ABLOY in Charlotte, North Carolina in November 2016. The seminar materials were developed in conjunction with corporate executives and included the application of state-of-the-art supply chain concepts and technologies to ASSA ABLOY’s global operations. ASSA ABLOY, headquartered in Stockholm, Sweden, is the global leader in intelligent lock and security solutions with more than 46,000 employees, and operations in more than 70 countries, with annual sales of about $7.5 billion.

Assistant Professor Usman Ahmed’s paper, “Complexity and the Triple Bottom Line: An Information Processing Perspective,” was recently accepted for publication in the International Journal of Operations and Production Management.
Assistant Professor Amir Mousavian co-authored “A Risk Optimization Model for Enhanced Power Grid Resilience against Physical Attacks,” which was published in Electric Power Systems Research (February 2017). The authors address the problem of the transmission system security and develop an optimization model to determine the optimal investment decision for the resilient design of the transmission systems against physical attacks.


In 2016, John Milne, the Neil ’64 and Karen Bonke Associate Professor in Engineering Management, coauthored “Optimization of Assigning Passengers Seats on an Airplane Based on Their Carry-on Luggage,” which was published in the Journal of Air Transport Management. The paper builds on research first published by Prof. Milne in 2014, which attracted both popular and scholarly interest. The research has been featured in national and international media and the original paper has been downloaded more than 12,000 times.

Associate Professor Santosh Mahapatra and two co-authors recently published “Market Price Uncertainty, Risk Aversion and Procurement: Combining Contracts and Open Market Sourcing Alternatives” in the International Journal of Production Economics.

The authors evaluated the implications of concurrent utilization of contracts and open market arrangements by a risk averse buyer in continuous procuring of a standardized product of known demand over a specified time period. Prof. Mahapatra also co-authored “A Comparison of Buyback and Trade-in Policies to Acquire Used Products for Remanufacturing” to be published in the Journal of Business Logistics.

Executive Seminar in Global Supply Chain Management
August 1 – 4, 2017 • Potsdam Campus

Highly Interactive Format • Hands-on Simulation & Negotiation Exercises

Join more than 500 past participants from 81 globally recognized companies including:

Accenture • Alcoa • Avon Products • Babcock Power • Bank of America • Boeing Company • Carrier Corporation • Corning Incorporated • Crane Company • Cybex • Dell Computer • Delta Airlines • Dresser-Rand • Eastman Kodak • Frito-Lay • General Dynamics • General Electric • General Motors • Grainger • Hewlett-Packard • Honeywell International • IBM • ITT Industries • Johnson & Johnson • Lockheed Martin • Lutron Electronics • National Grid • Northrup Grumman • Osram Sylvania • Pfizer • Rockwell International • Saint-Gobain • Sikorsky Aircraft • Snap-on Tools • Stanley Black & Decker • Texas Instruments • Toyota Industrial Equipment • Xerox Corporation

To register or request more information: www.clarkson.edu/business/executive/seminar/index.html or contact Tanya Conto, Program Coordinator • 315-268-7969 • Fax 315-268-3810 • gscm@clarkson.edu
Clarkson APICS Student Chapter Re-established

APICS (The Association for Operations Management) is the leading professional organization for supply chain management. Their mission is to foster the advancement of end-to-end supply chain management through a body of knowledge, innovative research, systems and methods.

A group of School of Business and Engineering & Management students re-established the Clarkson APICS Student Chapter last semester. Membership for this professional society comes with numerous benefits including networking with industry professionals, hands on experience and exposure to modern day supply chain concepts. Professor Farzad Mahmoodi serves as the faculty advisor for the Clarkson chapter.

In the fall semester, the student chapter sponsored the Goodyear Case competition. The officers also had the opportunity to meet with other APICS chapters and professional members and tour a FedEx facility in Essex, Vermont. The FedEx representatives discussed real-world supply chain challenges they are facing and suggested remedies. This semester, several members of the student chapter are participating in a case study competition in Albany, N.Y., sponsored by the Lake Champlain Professional APICS chapter.

The Clarkson Online MBA. Learn where you live.

Even if you have never taken a business class, you can complete your MBA online in just two years. We offer options that let you earn your Clarkson MBA on your schedule — wherever you are — while you continue working. As you learn new business strategies, you can apply them to your current position.

You’ll take part in the same graduate business courses taught by the same professors as students on campus. Talk with your professors and classmates as if you were in the same room.

To apply, go to www.clarkson.edu/mba.