

# CRSSCA - 7<sup>th</sup> Annual Supply Chain & Logistics Management Workshop, 2022



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## Emerging Issues and Drivers for Supply Chain & Logistics Sustainability

December 6, 2022; 9:00–17:00, at Faculty of Management, Dalhousie University

The Supply Chain and Logistics Management (SC&LM) workshop is a flagship event of the CRSSCA (Centre for Research in Sustainable Supply Chain Analytics) organized by Dr. M. Ali Ülkü. This annual series of SC&LM workshops brings together distinguished academics and industry leaders to share their knowledge on the latest trends, cutting-edge research, and best practices in SC&LM related to the workshop theme. It provides a unique opportunity to cross-pollinate ideas and network in a collegial environment while showcasing students' accomplishments in research and industry-partnered experiential learning projects.

### Final Program

8:30-9:00	<b>Registration, Coffee &amp; Donuts</b>
9:00-9:10	<b>Welcome Speech</b> by <b>Dr. Binod Sundararajan</b> , i-Director-Rowe School, Prof. of Management
9:10-9:20	<b>Dr. M. Ali Ülkü</b> , Prof. of SCDS & Director- CRSSCA, Rowe School of Business, Dalhousie U.
<b>Theme Intro</b>	<i>Emerging Issues and Drivers for SC&amp;LM Sustainability: A Thematic Introduction</i>
9:30-10:00	<b>Richard Upton</b> (Senior SC Director) & <b>Kaitlyn Veitch</b> (SC Manager), Irving Shipbuilding, Halifax
<b>Talk #1</b>	<i>The Complexity and Emerging Issues in Supply Chains for Shipbuilding</i>
10:00-10:30	<b>Patrick Bohan</b> , Director-Government Relations & Stakeholder Engagement, HPA & The PIER
<b>Talk #2</b>	<i>Making the Next Wave: Supply Chain Innovations at the Port of Halifax</i>
10:30-11:00	<b>Break - Coffee and Networking</b>
11:00-12:00	<b>Dr. Christopher Tang</b> , UCLA Distinguished Professor and Edward W. Carter Chair in Business Administration, Anderson School of Management, University of California – Los Angeles
<b>Keynote</b>	<i>Doing Good in the ESG Era: Challenges and Opportunities</i>
12:00-12:50	<b>Lunch</b>
12:50-13:30	<b>2022 SC&amp;LM Best Student Research Competition - Awardees</b> <b>1<sup>st</sup> Place:</b> Ibrahim O. Oguntola, Dalhousie University <i>On Optimal Design of a Multimodal Logistics Network: Shipment Consolidation and Machine Learning Models</i> <b>2<sup>nd</sup> Place:</b> Shobeir Amirnequiee, Western University <i>Outsourcing Decision in the Presence of Supplier Copycatting</i> <b>3<sup>rd</sup> Place:</b> Esmâ Akgün, University of Waterloo <i>Determining Optimal COVID-19 Testing Center Locations and Capacities</i>
13:30-14:00	<b>Dr. Sibel Salman</b> , Professor of Industrial Engineering, Koç University, İstanbul, Türkiye
<b>Talk #3</b>	<i>Optimization with Equity Objectives in Disaster Preparedness and Response</i>
14:00-14:30	<b>Dr. Anton Ovchinnikov</b> , Prof. of Management Analytics, Smith Sch. of Business, Queen's U.
<b>Talk #4</b>	<i>Tackling the Returns Problem with Advanced Production and Information Technologies</i>
14:30-15:00	<b>Dr. Jafar Heydari</b> , Assoc. Professor, School of Industrial Engineering, University of Tehran
<b>Talk #5</b>	<i>Conflicting Objectives in Managing Supply Chains: Identification, Understanding, and Aligning</i>
3:00-3:20	<b>Break - Coffee</b>
3:20-4:40	<b>Dalhousie SC&amp;LM Major Students Cap-Stone Project Competition - Awardees</b> <b>1<sup>st</sup> Place:</b> <i>Adoption of Advanced Technologies for Port Logistics: Barriers and Enablers</i> Braden A. Liberty, Zack Nattress, Linda Sener, Yi Zhou <b>2<sup>nd</sup> Place:</b> <i>Analysis of Seaport Operations and Productivity: A Supply Chain Process Flow Approach</i> Su Baysal, Oliver Hands, Callum E. Legge, Lukie Tong <b>3<sup>rd</sup> Place:</b> <i>Port Sustainability: Definitions, Best Practices, and Failures in the World</i> Zheng Cong, Mitchell Emerson, Anh D. Tran, Xijie Zhao <b>Finalist:</b> <i>Integrating Seaport Logistics into Green Energy Supply Chains</i> Kevin Jiang, Hurui Liu, Mitchell N. Patterson, Jack Yuan, Jianing Zhang <b>Finalist:</b> <i>Seaport Cities and United Nations Sustainable Development Goals: A Supply Chain Perspective</i> Yubo Gao, Chenhao Li, Jiaming Liu, Zhenghao Su, Weiliang Suo
4:40-5:00	<b>Closing Remarks</b> by <b>Dr. M. Ali Ülkü</b>

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## Keynote Speaker

**Dr. Christopher S. Tang** is a University Distinguished Professor and the holder of the Edward W. Carter Chair in Business Administration at the UCLA Anderson School of Management. Known as a thought leader in global supply chain management, Chris consulted with numerous global companies, including Amgen, Amazon, HP, IBM, Nestlé (USA), etc.; taught at Stanford University, UC Berkeley, Hong Kong University of Science and Technology, National University of Singapore, MIT (Zaragoza), and London Business School. Chris has published seven books, 30 book chapters, and over 200 research articles in global supply chain management. He has also published over 100 articles in public media, including Wall Street Journal, Financial Times, Barron's, Bloomberg Law, Fortune, Los Angeles Times, etc. He received his B.Sc. (First class honours in Mathematics) from King's College, London, M.A (in Statistics), M.Phil. (in Administrative Science), and Ph.D. (in Management Science) from Yale University.



### **Doing Good in the ESG Era: Challenges and Opportunities**

*In today's economy, investors pay attention to ESG (Environmental, Social, Governance) measures. However, ESG measures can be of little value if they do not explicitly incorporate a firm's operations throughout its entire supply chain. In this talk, I discuss the key drivers for ESG investing, as well as the importance and value of unifying ESG and supply chain thinking. Finally, I present some key challenges and opportunities for practitioners and researchers in both ESG and supply chain management.*

## Invited Speakers

**Patrick Bohan**, PPM, CCLP, MBA, is the Director of Government Relations & Stakeholder Engagement for the Halifax Port Authority (HPA) and The PIER living lab. In his role, Patrick works with enterprise-wide stakeholders for the Port of Halifax as well as various levels of government to pursue long-term collaboration and understanding. Prior to this, Patrick spent over 20 years in the marketing and business development area for the HPA in both cargo and cruise ship development. Patrick holds an undergraduate degree in business administration from the Ivey Business School at Western and an MBA from SMU. He is accredited by the CITT as a Certified Logistics Professional (CCLP) and by the American Association of Port Authorities as a Professional Port Manager. Patrick has over 28 years of transportation, trade and international business experience and was awarded the CITT's Award of Excellence in 2020.



**Richard Upton** is a Senior Supply Chain Director of the Canadian Surface Combatant Program at Irving Shipbuilding. Richard spent 22 years in Procurement and Supply Chain Management roles at Rolls-Royce plc prior to joining Irving Shipbuilding in 2021. During his time with Rolls-Royce, he served as a Supplier Management Executive, where he was responsible for global supplier management of the external supply chain across the U.S., Europe, and Asia. Previous to that, he held a role as Strategic Purchasing Executive, where he was responsible for the strategic direction and new and future contracts for the external supply chain. Preceding his time as an Executive, Richard spent two years as the Head of Equipment Procurement in Indianapolis, USA. Richard's background includes over five years with Rolls-Royce Aero Engine Controls, where he served as a director of strategy/procurement. Richard graduated from Staffordshire University with a first-class BA(Hons) degree in Business Studies and is a Member of the Chartered Institute for Purchasing and Supply (CIPS). Originally from the U.K.— Richard now lives in Halifax, Canada, with his wife, Hannah and two children.



**Kaitlyn Veitch** is a proud graduate of the Rowe School of Business. Since graduating from the Commerce Co-op Program in 2013, Kaitlyn has spent the last ten years in Supply Chain. She brings diverse experience from the marine, forestry, and transportation industries. Currently, Kaitlyn holds the position of Supply Chain Strategy Manager for the Canadian Surface Combatant Project. The team is working on the most modern and complex shipbuilding program in Canada's history. Irving Shipbuilding's supply chain team has generated \$9.8 billion in increased GDP, and her favourite aspect of the job is seeing the Canadian industry grow. Kaitlyn has much pride in revitalizing the Canadian Shipbuilding industry right here in Halifax. Kaitlyn has an MBA from the Ivey School of Business and sits on the executive board of the Affordable Housing Association of Nova Scotia.



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**Sibel Salman, Ph.D.**, is a Professor at the Industrial Engineering Department of the College of Engineering at Koç University in Istanbul, Turkey. Prior to joining Koç University, she held a faculty position at the Krannert School of Management, Purdue University, USA. She got her Ph.D. in Operations Research from Carnegie Mellon University, the USA, and her M.Sc. and B.Sc. degrees from Bilkent University, Turkey. She has published in the areas of disaster and healthcare logistics, supply chain management, facility location, vehicle routing, network design, production scheduling, approximation algorithms, online algorithms, and combinatorial optimization. She is a Department Editor for the OR Spectrum, an Associate Editor for the Sustainable Analytics and Modeling and Socio-Economic Planning Science journals, and she has been on the editorial board of the European Journal of Operational Research, Computers and Operations

Research, Production and Operations Management, and Resilience Findings journals. Dr. Salman is a co-founder of the EURO working group on Humanitarian Operations (HOpe), is on its executive board, and is currently a coordinating member of the EURO WISDOM Forum. She is a member of the Turkish Science Academy. Her current research interests are in humanitarian logistics, disaster management, risk management, healthcare logistics, migration studies, and sustainable operations, as well as various network optimization, facility location, network design, and vehicle routing problems.

## Optimization with Equity Objectives in Disaster Preparedness and Response

*In this talk, we first present an overview of optimization problems related to disaster preparedness and response. We then discuss the objectives addressed in these studies and how the equity objective has been modelled in different forms in the literature. Finally, as an example of inequity-averse optimization in disaster preparedness, we present our work on a stochastic shelter location problem together with a case study related to earthquake preparedness activities in Istanbul, Turkey and derive several insights for decision-makers in this case.*

**Anton Ovchinnikov, Ph.D.**, is a Distinguished Professor of Management Analytics at the Smith School of Business, Queen's University, Canada, and a Visiting Professor at INSEAD. He holds a specialist degree in economics from his hometown university in Krasnoyarsk, Russia, and a Ph.D. in operations management from the University of Toronto. His research interests are in the intersection of Management Analytics (Management Science and Operations Management) with Marketing and Economics. On the theoretical side, these include models of strategic behaviour of consumers and firms, innovative operations, and environmental sustainability, and on the applied side – data-driven decision-making in business, government, and non-profits. Anton published extensively in both leading academic research journals, such as Management Science, Operations Research, Manufacturing & Services Operations Management and Production and Operations Management, and the leading practice-oriented journals, such as Harvard Business Review. Anton teaches courses on data-driven decision-making, data analytics, artificial intelligence (AI), operations and supply chain management, and pricing analytics in the MBA and EMBA programs, in specialized programs in management analytics, and in multiple open and custom executive education programs around the world. He also consults on the topics of advanced analytics and AI, including sustainability and ESG applications. Anton is twice the winner of the "Faculty of the Year" Award for the Master in Management Analytics (MMA) program at Smith, a co-winner of the 2020 UPS Prize (for the world's best program in analytics) by the Institute of Operations Research and Management Sciences (INFORMS). His research received numerous prestigious recognitions, such as the 2015 Paul Kleindorfer Award in Sustainability from the Production and Operations Management Society (POMS). Anton is also a prolific case writer and a three-time winner of INFORMS Case Competitions (2005, 2011 and 2021) for the best new cases in analytics. Anton organized several conferences and is on the editorial review boards of several leading academic journals; his contributions to the academic community also received multiple service awards. Prior to his current appointments, Anton taught data and decision analysis courses at the University of Virginia and management science and supply chain management courses at the University of Toronto. Before starting his academic career, he worked in commercializing high-tech developments and co-owned a business in industrial and architectural design. Anton still owns a boutique consulting firm and, with his wife, runs an international artist residency (L'AiR Arts) based in a historical artist atelier in the Montparnasse neighbourhood of Paris.



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## Tackling the Returns Problem with Advanced Production and Information Technologies

*Returns are a major problem for manufacturers and retailers alike: in some product categories they reach 30-50% of sales, especially online, and despite the best efforts, much of the returned merchandise ends up in landfills. In this talk I will discuss two kinds of solutions that firms could use to address this problem. One is advanced production technologies, such as mass customization. Should customized products be returnable, and how can firms use customization to reduce returns? Another is advanced information technologies: many big tech firms may know more about consumers than consumers know about themselves. How can they use this information to design selling and return policies that could increase profits and reduce returns? - This talk is based on the joint work with Gökçe Esenduran (Purdue), Paolo Letizia (Tennessee), and Murray Lei and Kiarash Hossani (Queen's).*

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**Jafar Heydari, Ph.D.**, is an Associate Professor of Supply Chain and Operations Management at the School of Industrial Engineering, University of Tehran. He holds a Ph.D. in Industrial Engineering, where his research focuses on Supply Chain and Operations Management. He is currently a visiting Professor at Ted Rogers School of Management, Toronto Metropolitan University. He received the “Excellence in Teaching Award” at the 6<sup>th</sup> Education Festival of the University of Tehran (2019). He has been recognized among the World's top 2% scientists in 2021 for the third successive year in the sub-field of Operations Research based on annual reports by Stanford University researchers and published by Elsevier. Jafar also served as Director of Undergraduate Studies (2013-2015), Director of Industrial Engineering Program (2015-2017), Deputy of Educational Affairs (2016-2017), Deputy of Academic Affairs (2017-2019), and a member of Search & Recruitment Committee (since 2019), at the School of Industrial Engineering, University of Tehran. Jafar’s main areas of research interests include mathematical modelling of supply chain coordination, supply chain contract design, green supply chain management, sustainability in supply chain operations, and applied game theory. His works appear in Service Science, European Journal of Operational Research, Decision Support Systems, Int. Journal of Production Economics, Transportation Research – E, Computers and Operations Research, Journal of Cleaner Production, Computers and Industrial Engineering.



### **Conflicting Objectives in Managing Supply Chains: Identification, Understanding, and Aligning**

*A crucial challenge in managing the supply chain (SC) is the existence of conflicting objectives for players of SCs. Surprisingly, in practice, it turns out most of the decisions made by each SC player are generally in conflict with the whole system’s performance goal. Lack of a systemic view in making decisions causes such misalignment of decisions. Coordination between decision-makers is a key concept in SC performance improvement, which is neglected by dominant SC members even in many famous commercial/retailing SCs. In this talk, I discuss the role of the “coordination” concept and the challenges to achieving channel coordination in improving the performance of SCs. I will introduce some strategies to align the conflicting objectives of SC chain decision-makers.*

### **Workshop Moderators**

**A. Akofa Amegboleza (Ph.D. Candidate) & Simranjeet S. Chadha (Ph.D. Candidate)**



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## Workshop Organizer and Chair



**M. Ali Ülkü, Ph.D., P.Eng.**, is a Full Professor and the (Founding) Director of the Centre for Research in Sustainable Supply Chain Analytics (CRSSCA) at the Rowe School of Business, Dalhousie University, Canada. Dr. Ülkü's research includes studies in circular and sustainable supply chain and (humanitarian) logistics systems, analysis of manufacturing/retailing and service operations, green marketing and optimal contract designs, analytical modelling of sustainable consumption and development, and interdisciplinary research on big data and societal/environmental problems. His research papers have appeared in such leading scholarly journals as the *European Journal of Operational Research*, *Int. Journal of Production Economics*, *Journal of Business Research*, *Journal of Cleaner Production*, *Journal of Retailing and Consumer Services*, and *Service Science*. His research programs have received funding from various agencies, including the National Science Foundation (USA), the National Sciences and Engineering Research Council of Canada, and the Scientific and Technological Research Council of Türkiye. In 2022, for a five-year-long research project on logistics emissions modelling, Dr.Ülkü and his co-applicants were awarded \$3.62 million by the Climate Action and Awareness Fund, Government of Canada. The recipient of the *Research Star Award* (2021, Dalhousie), the *Distinguished Professor Award* (2019, IEOM Society), and the *Exceptional Teaching Award* (2007, University of Waterloo), Dr. Ülkü has designed from scratch and taught numerous courses on Supply Chain Management, Logistics, Operations Management, Transportation, Optimization, and Business Analytics in Canada, Türkiye, and the USA. Among others, he serves as an Associate Editor for the journal *INFOR: Information Systems and Operational Research*. He is also a cross-appointed professor with the Department of Industrial Engineering and the School for Resources and Environmental Studies and an adjunct professor of Management Sciences at the Faculty of Engineering at the University of Waterloo. He co-edited a book entitled *Big Data Analytics in Supply Chain Management: Theory and Applications*, published in 2021 by CRC Press - Taylor & Francis.

## About CRSSCA ([www.dal.ca/crssca](http://www.dal.ca/crssca))

The Centre for Research in Sustainable Supply Chain Analytics (CRSSCA) is the world's first and only research centre dedicated to sustainable supply chain analytics research. The mission of the Centre for Research in Sustainable Supply Chain Analytics (CRSSCA) is to provide big data-driven, innovative and analytical solutions to and to disseminate scholarly knowledge in the understanding of complex modern global supply chain problems through the lens of sustainability (economic, environmental, social and cultural). Housed in the Rowe School of Business, Dalhousie University, CRSSCA is the supply chain research hub in Eastern Canada. CRSSCA fosters interdisciplinary research that sheds light on complex issues in supply chain management. Keeping sustainability imperatives front and centre, CRSSCA creates new knowledge in prescribing solution models for data-driven industrial problems, devises analytical tools for better decision-making and develops insights into the intricate relationships between supply chain operations, green logistics (global trade, inventory, process and product design, procurement, manufacturing, transportation) and sustainable consumption.

A frontier research hub in Eastern Canada, CRSSCA enables faculty-student-industry research collaborations, brings in research funding, produces cutting-edge research, sponsors annual workshops and case competitions, and provides unique opportunities for students and executives to enhance their academic and professional skills while enabling research experience for the unique SC&LM Major in the Bachelor of Commerce program at Dalhousie University.

With its activities, CRSSCA is proud to contribute to the following United Nations Sustainable Development Goals (UNSDGs):

