CRSSCA - 10th Annual Supply Chain & Logistics Management Workshop, 2025

DALHOUSIE UNIVERSITY | Centre for Research in Sustainable Supply Chain Analytics

Supply Chain & Logistics: A Look Ahead

Time: 31 March 2025 (Monday); 8:30–16:30
Location: Rowe Building, Room #3089, 6100 University Ave., B3H 4R2, Halifax, NS, Canada

Dalhousie University operates in the unceded territories of the Mi'kmaw, Wolastoqey, and Peskotomuhkati Peoples. These sovereign nations hold inherent rights as the original peoples of these lands, and we each carry collective obligations under the Peace and Friendship Treaties. Section 35 of the Constitution Act, 1982 recognizes and affirms Aboriginal and Treaty rights in Canada. We recognize that African Nova Scotians are a distinct people whose histories, legacies and contributions have enriched that part of Mi'kma'ki known as Nova Scotia for over 400 years.

A flagship event of CRSSCA (Centre for Research in Sustainable Supply Chain Analytics), Faculty of Management, Dalhousie University, and organized by Dr. M. Ali Ülkü, this series of annual Supply Chain and Logistics Management (SCLM) workshops not only brings in distinguished academics and industry leaders to share their knowledge on the latest trends and cutting-edge research and best practices in SCLM but also provides an excellent opportunity to cross-pollinate ideas and network with academics, practitioners, and students in a collegial environment while showcasing students' accomplishments in research and industry-partnered experiential learning projects.

Program

8:30-9:00	**Registration and Coffee & Donuts**
9:00-9:15 **Welcome & Theme Intro**	**Dr. M. Ali Ülkü**, Professor and A-Chair of Management Science & Information Systems, and Director of CRSSCA, Faculty of Management, Dalhousie University, Halifax, NS, Canada ***Supply Chain and Logistics: A Look Ahead***
9:15-9:30 **Talk #1**	**Evan Brink**, Supplier Outreach Specialist, Irving ShipBuiding Inc., Halifax, Canada ***Introducing Irving Shipbuilding Inc. (ISI)***
9:30:11:20	**Best SCLM Capstone Project Competition - Presentations** **CSP A: A Method to Achieve Supply Chain Diversification** **Cameron D. Bruce, Will Martin, Mahisha Punithanathan, Shihan Wang** **CSP B: Developing Metrics for Inventory Policy for a Shipyard** **Khoa D. Do, Alex Kneen, Pavle Krstic, Jiashuai Li, Xinyu Yan** **CSP C: Performance Assessment of a Third-Party Logistics Provider** **Alex Branco, Brian Finnigan, Thomas Sorrell, Vy Tran, Shuonan Zhang** **CSP D: A Min/Max Inventory Management System for Support Items** **Nick Brown, Benjamin C. Clayton, Campbell Henderson, Lizzie Schmidt, Gülizar Yüksel** **CSP E: Revalorization in Supply Chains: How to Evaluate Surplus Material?** **Mitchell P. Faughnan, Shiyuan Li, Hoa Phat Luong, Tri Ngo, Natalie M. Woodcock**
11:20-12:20	**Announcement of Awards, Lunch & Networking**
12:20-13:00 **Keynote #1**	**Dr. Emre Berk**, Professor of Business Administration, Bilkent University, Ankara, Türkiye, and Visiting Professor, Sloan School of Management, MIT, Boston, MA, USA ***Coordination Contracts for Perishable Products with Returns: Models and Challenges***
13:00-13:40 **Keynote #2**	**Dr. Ülkü Gürler**, Professor of Industrial Engineering, Bilkent University, Ankara, Türkiye, and Visiting Professor, The Wharton School, University of Pennsylvania, Philadelphia, PA, USA ***Replenishment of Perishables: A Model with Freshness Preserving Efforts and Estimation of Random Shelf Life Distribution***
13:40-14:00	**Break**
14:00-14:30 **Talk #2**	**Dr. Fanny-Ève Bordeleau**, Assistant Professor, Management Science & Information Systems and College of Digital Transformation, Dalhousie University, Halifax, NS, Canada ***Digital Twins in Supply Chains: Shared Information as a Value Creator***
14:30-15:00 **Talk #3**	**Dr. Bo Yu**, Associate Professor, Management Science & Information Systems, Faculty of Management, Dalhousie University, Halifax, NS, Canada ***Smart Contracts + Automated Negotiations: Building Hyper-collaborative Systems for Commerce***
15:00-16:30	**Closing Remarks & Networking**

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Keynote Speakers

Emre Berk, Ph.D., is a Full Professor of Operations Management at the Faculty of Business Administration, Bilkent University, Türkiye. He received his BSc in Mechanical Engineering from Boğaziçi University in 1986, his M.Sc. from Washington State University in 1989 as a Fulbright Scholar, and an MBA from the University of Washington in 1995. Dr. Berk received his Ph.D. from the University of Washington in 1996 with a dissertation on discharge policies in healthcare management and joined Bilkent University. He teaches courses in Operations Management and Operations Strategy at undergraduate and graduate levels. He has served as Director of the MS/PhD Programs from 1997 to 2007, Director of the Executive MBA Program from 2017 to 2020, and as Assistant Dean from 2017 to 2021. He has also taught at the Middle East Technical University (ODTÜ) in Türkiye and Texas A&M University in the USA. His research interests include healthcare management, quality management, inventory control for perishables, supply chain and revenue management, operations in carbon economies, and operations strategy. His research has been funded by the National Science Foundation (USA) and TÜBİTAK (The Scientific and Technological Council of Türkiye), and has appeared in journals such as *Management Science*, *Operations Research*, *International Journal of Production Economics*, *European Journal of Operational Research*, *IIE Transactions*, *Naval Research Logistics*, and *Sustainability*. He has served as an Associate Editor for OR Letters and IIE Transactions and is currently an Associate Editor for IISE Transactions. He has been a Visiting Scholar at the Marshall School of Business, USC, and a Visiting Professor at Texas A&M University. Prof. Dr. Berk is an affiliate researcher with CRSSCA and currently is a Visiting Scholar at MIT Sloan School of Management, Boston, MA, USA.

Coordination Contracts for Perishable Products with Returns: Models and Challenges

The freshness of perishable products, such as produce, is affected by the floor operations at a store, including produce handling, stocking, and improper ventilation of storage and display areas for ethylene-sensitive products. Poor in-store handling of the product leads to product returns after customer purchase, resulting in additional tangible and intangible costs for both parties. The supplier's brand and overall market share may suffer greatly due to local retailer-specific customer dissatisfaction. Perishability caused by floor operations can be improved with investments in physical infrastructure as well as training and changes in handling practices. Due to the disparities between suppliers and retailers in terms of capital resources, expertise, and market awareness, the centralized and decentralized decisions regarding the optimal level of investment for improvement may differ. Furthermore, store conditions and practices can be difficult and costly for suppliers to monitor and enforce. Therefore, there is a need to better understand the economic coordination mechanisms suitable for such settings. To that end, we consider a dyadic supply chain for a perishable product consisting of a Supplier and a Retailer under several types of coordinating contracts, where we incorporate payments based on the level of freshness-dependent customer returns into the contract design. We provide some analytical results on optimality in various models. Among the issues we discuss in this talk are (i) the conditions under which coordination can exist, (ii) fairness of the profit- / cost-sharing mechanisms, (iii) optimal levels of investment by different actors, (iv) impact of asymmetry of information, and the challenges in implementation.

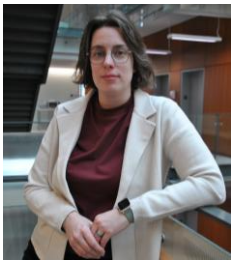
Ülkü Gürler, Ph.D., is a Full Professor in the Industrial Engineering Department at Bilkent University, Türkiye, and is currently a visiting scholar at the Wharton School of the University of Pennsylvania until August 2025. She received her B.Sc. in Applied Statistics from the Middle East Technical University. Then, she commenced her graduate studies as a Fulbright Scholar and earned her M.Sc. and Ph.D. in Statistics from the Wharton School. In 1990, upon completing her doctoral studies, Dr. Gürler joined the Industrial Engineering Department at Bilkent University, where she has since established her academic career. Between 2016 and 2023, she served as the Acting Dean and, subsequently, the Dean of the Faculty of Business Administration at Bilkent University. Additionally, she has held visiting researcher positions at esteemed institutions, including the University of California, Davis, the Catholic University of Leuven, and Macquarie University. Prof. Dr. Gürler has also served as the Chair of the Graduate Programs Committee within the Industrial Engineering Department and has taught a wide range of courses, including Probability, Statistics, Stochastic Processes, Forecasting, and Quality Assurance, at both the undergraduate and graduate levels. She has been awarded research grants from prestigious organizations, including the National Science Foundation (NSF) and the Scientific and Technological Research Council of Türkiye (TÜBİTAK). Her primary research interests lie in stochastic inventory management, maintenance modeling, and Bayesian applications to inventory models. Recently, her research has focused on inventory planning, the analysis of perishable goods, and addressing challenges related to carbon emissions and regulatory compliance in supply chains. Her scholarly work has been published in leading journals, including the *Journal of the American Statistical Association*, *Operations Research*, *Production and Operations Management*, *IIE Transactions*, *Journal of Multivariate Analysis*, *European Journal of Operations Research*, *Int. Journal of Production Research*, *Int. Journal of Production Research*, and *Biometrika*.

Replenishment of Perishables: A Model with Freshness Preserving Efforts and Estimation of Random Shelf Life Distribution

According to a United Nations report, the prevalence of hunger and food insecurity has been increasing since 2015, resulting in approximately 9.2 % of the global population experiencing chronic hunger, which is 122 million more than in 2019. In contrast, approximately 13.2% of food produced is lost between harvest and retail, while an estimated 19% of total food production is wasted across households, food service, and retail sectors. Beyond inefficiencies in supply chain management and natural causes, the perishability of food products is a significant factor contributing to food waste. Perishability refers to products with a limited shelf life susceptible to spoilage, decay, or becoming unsafe for consumption over time. This presentation introduces a stylized inventory model for perishable products aimed at mitigating food waste. Specifically, we explore the impact of freshness-preserving efforts on the inventory management of perishable goods. We first focus on a single-product, single-location, continuous-review inventory model with positive lead time, where products have fixed lifetimes. Demand arrivals are assumed to follow a Poisson process. The objective is to minimize the expected cost per unit time in the infinite horizon. We then extend the basic model to the case where the exact shelf life of products is unknown and is considered a random variable under the same objective function, comparing the impact of this randomness. Another issue with random perishing is the information about the distribution of shelf lives. In most cases, knowing this distribution is too good to be true. Hence, we also discuss methods to estimate the shelf life distribution in a simple setting.

Invited Academic Speakers

Fanny-Ève (FE) Bordeleau, Ph.D., is an Assistant Professor of Management Science and information Systems at the Faculty of Management and the College of Digital Transformation, Dalhousie University. FE got their B.Sc. in Mechanical Engineering and a Ph.D. from Université de Sherbrooke. Dr. Bordeleau is also a researcher at CRSSCA, specializing in information management and the mechanisms by which information continuously flows within organizations. The digital transformation in organizations and business ecosystems is rarely deployed uniformly. Some processes, work divisions, or supply chain actors will have access to advanced systems where data flows without human intervention. In contrast, others must manually enter and transform data to ensure that the correct information is available. Dr. Bordeleau studies the impacts of these information bottlenecks and the methods by which they can be identified to support the resource allocation of digitalization projects. Their research focuses on maximizing the productivity and strategic value of investing in digital transformation.



Digital Twins in Supply Chains: Shared Information as a Value Creator

Digital Twins (DT) transform supply chain management by creating virtual replicas of physical assets. These digital counterparts utilize real-time data sharing and analysis to predict and simulate the state of a system, thereby influencing it. They can help predict disruptions and optimize resources more effectively when information is shared across supply chain actors. This leads to more informed decisions and increased efficiency. Supply chains become more transparent thanks to shared information. This presentation will showcase the practical applications, benefits, and challenges, demonstrating how shared information through DTs adds significant value to supply chain actors.

Bo Yu, Ph.D., is an Associate Professor in the Department of Management Science and Information Systems and a researcher at CRSSCA, Faculty of Management, Dalhousie University. He got his Ph.D. and M.Sc. in Administration from John Molson School, Concordia University, and his B.Sc. in Computer Science from Tianjin University. Dr. Yu's research interests include decision-making and support, e-negotiation, e-markets, and technological agency. His research has been published in journals such as *Information & Management*, *Electronic Markets*, *Omega*, and *Information Systems Frontiers*.

Smart Contracts + Automated Negotiations: Building Hyper-collaborative Systems for Commerce

Modern technologies are transforming business and supply chain practices. In particular, participant interactions are becoming faster, more intensive, and more dynamic. This trend pushes businesses toward hyper-collaborative systems, which present new challenges and opportunities. This talk will explore how smart contracts and automated negotiations can help business entities build or participate in a hyper-collaborative commerce system. The example of a smart grid for electricity demonstrates how these challenges and issues can be addressed.

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Invited Practitioner Speaker

Evan Brink is the Supplier Outreach Specialist for the Canadian Surface Combatant Program at Irving Shipbuilding. As a member of the Supply Chain Integration team, he facilitates supplier onboarding, organizes events with key partners, and builds relationships within the defense and shipbuilding industries. Evan received his B.A. (Hons) degree in Psychology from Saint Mary's University in 2017, where he served as Vice President of the Psychology Society. In 2023, he earned a Graduate Certificate in Public Relations from NSCC and joined the college's Applied Research team. He is a published content developer with works featured in Business in Focus Magazine and a recipient of the Coast's Best of Halifax Readers' Choice Award for event planning. With over a decade of experience coordinating events and developing promotional strategies, Evan joined Irving Shipbuilding in January 2025, eager to contribute to the growth of the shipbuilding industry in his hometown of Halifax.

Workshop Organizer and Chair

M. Ali Ülkü, Ph.D., P.Eng., is a Full Professor and the Department Chair (Acting) of Management Science and Information Systems (Faculty of Management) and the (founding) Director of the Centre for Research in Sustainable Supply Chain Analytics (CRSSCA) at Dalhousie University, Halifax, NS, Canada. He holds a Ph.D. in Management Sciences from the University of Waterloo, an M.Sc. in Operations Research from Çukurova University, and a B.Sc. in Industrial Engineering from Bilkent University. His research encompasses sustainable supply chain and logistics systems, the analysis of manufacturing and service operations, green marketing, optimal contract designs, the analytical modeling of sustainable production and consumption, and interdisciplinary, community-based policy issues. His co-edited book, Big Data Analytics in Supply Chain Management: Theory and Applications, was published by CRC Press in 2021. His publications have appeared in such journals as the *Annals of Operations Research*, *Computers & Industrial Engineering*, *Int. J. of Production Economics*, *Journal of Business Research*, *Journal of Retailing and Consumer Services*, *Journal of Cleaner Production*, *Service Science*, and *Sustainability*. He is an Associate Editor for *INFOR: Information Systems and Operational Research*. A recipient of teaching excellence awards, he has taught operations and supply chain management, business analytics, optimization, logistics, and transportation courses at various universities in Canada, Türkiye, and the USA. Prof. Dr. Ülkü was honored with the 2019 Distinguished Professor Award by the IEOM Society International, the 2023 Archibald Teaching Excellence Award, and the 2023 Global Triple-E Awardee (Education Champion).

About CRSSCA (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 studying sustainable supply chain analytics. The mission of the Centre for Research in Sustainable Supply Chain Analytics (CRSSCA) is to provide big data-driven, innovative, and analytical solutions and to disseminate scholarly knowledge on understanding complex modern global supply chain problems through the lens of sustainability, encompassing economic, environmental, social, and cultural aspects. Housed in the Faculty of Management at Dalhousie University, CRSSCA is the supply chain research hub in Eastern Canada. CRSSCA promotes interdisciplinary research that illuminates 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 SCLM Major in the Bachelor of Commerce program at Dalhousie University.

CRSSCA contributes to achieving the UN Sustainable Development Goals (SDGs) #8, 9, 10, 11, 12, 13, and 17.