

Sessions for Monday, May 22

Monday, 08:00 AM - 09:30 AM

Invited Session

Monday, 08:00 AM - 09:30 AM, Celebration 1	Track: Retail Operations
Invited Session: Operations in Multi-channel Retailing	
Chair(s): Wenxin Xu	

115-0242 Channel Competition with Negative Social Interactions

Xue ZHAO, Student, Hong Kong Polytechnic Univ, Hong Kong, China

Xiaomeng Guo, Associate Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Guang Xiao, Associate Professor, Hong Kong Polytechnic Univ, Hong Kong, China

We consider competition between a brick-and-mortar channel and an online channel, with the former suffering from negative social network effect (NSNE). Consumers incur a stronger negative utility when the brick-and-mortar store is filled with more shoppers. We study the impacts of NSNE on two channels' pricing decisions and profit performance.

115-0319 Effect of a sustainable firm's entry on customer channel choices and existing retailers' market shares

H. Sebastian Heese, Professor, North Carolina State University, United States

Eda Kemahlioglu-Ziya, Associate Professor, North Carolina State, United States

Olga Perdikaki, Associate Professor, University of South Carolina, United States

New sustainability-marketed firms have emerged in the consumer packaged goods categories. We study how the entry of a new firm which sells an assortment of sustainable consumer goods affects the consumers' channel choices and the existing retailers' market shares in two types of product offerings -- packaged and fresh goods.

115-1048 Impact of product selection in live-streaming selling on sales

Zhendong Zuo, Student, University of South Carolina, United States

Chen Zhou, Associate Professor, University of South Carolina, United States

Yanlai Chu, Assistant Professor, Renmin University of China, China

Anindita Chakravarty, Associate Professor, University of Georgia, United States

Live-streaming selling has becoming a popular marketing strategy worldwide. However, what factors drive the success of live-streaming selling remain understudied. In this research, we focus on understanding the impact of product selection on sales performance through the lens of between-category complementarity as a critical success driver.

Invited Session

Monday, 08:00 AM - 09:30 AM, Celebration 2	Track: Behavioral Operations Management
Invited Session: Human Elements in Behavioral Operations Management	
Chair(s): Maya Balakrishnan	

115-0818 Inclusion of Women and Older Employees in Telecom Sales Teams and Sales Performance

Bengu Ozdemir, Student, IE BUSINESS SCHOOL, Spain

Antti Tenhiala, Assistant Professor, IE BUSINESS SCHOOL, Spain

Antoaneta Momcheva, Assistant Professor, Stockholm School of Economics, Sweden

Fabrizio Salvador, Professor, IE Business School, Spain

Diversity and inclusion practices enhance a culture of fairness, but also trigger integration costs, so their effect on team performance is unclear. Using proprietary data of 260 sales teams in technology sector we show that the inclusion of more women and older employees is associated with increased team sales performance.

115-0961 Behavioral Externalities of Process Automation

Ruth Beer, Assistant Professor, Baruch College, United States

Anyan Qi, Assistant Professor, University of Texas Dallas, United States

Ignacio Rios, Assistant Professor, Jindal School of Management, United States

We study the behavioral effects of process automation on human workers interacting with automated tasks. To accomplish this, we combine a theoretical model to derive predictions and a lab experiment to test them. Our main finding is that social preferences affect the productivity of workers when tasks are automated.

115-0998 Improving Human Algorithm Collaboration - Causes and Mitigation of Over- and Under-Adherence

Maya Balakrishnan, Student, Harvard Business School, United States

Kris Ferreira, Assistant Professor, Harvard University, United States

Jordan Tong, Associate Professor, University of Wisconsin-Madison, United States

We leverage controlled online experiments and analytical models of behavior to uncover a cognitive bias humans suffer from when adjusting algorithmic recommendations to account for their private information. We then use these insights to design algorithm transparency to mitigate the negative effects of this cognitive bias on forecasting performance.

115-1732 Customer and Agent Behavior in On-demand Delivery Services

Natalie Epstein, Student, HBS, United States


Monday, 08:00 AM - 09:30 AM

Santiago Gallino, Assistant Professor, The Wharton School, United States

Antonio Moreno, Associate Professor, Harvard University, United States

We study customers' behavior and decision making in the context of on-demand delivery services.

Contributed Session

Monday, 08:00 AM - 09:30 AM, Celebration 3	Track: Healthcare Operations Management
 Contributed Session: Equity in Healthcare Delivery	
Chair(s): Shubham Akshat	

115-0300 Moderator or Mediated? Patient Race's Role in the Impact of Hospital Operational Processes on Mortality

Qi Wang, Student, Xi'an Jiaotong University, China

Sarah Zheng, Assistant Professor, University of Victoria, Canada

Anita Carson, Professor, Boston University, United States

To investigate how racial disparities in patient-outcomes are driven by behavioral biases versus structural racism, we use data from over 39,000 patient visits to test the interactions between patient race, hospital operational processes, and mortality. We contribute to the behavioral operations healthcare literature and highlight the importance of racial equity.

115-0685 A Granular Approach to Optimal and Fair Patient Placement in Hospital Emergency Departments

Maureen Canellas, Assistant Professor, University of Massachusetts Chan Medical School, United States

Dessislava Pachamanova, Professor, Babson College, United States

Georgia Perakis, Professor, Massachusetts Institute of Technology, United States

Omar Skali Lami, Student, Massachusetts Institute of Technology, United States

Asterios Tsiourvas, Student, Massachusetts Institute of Technology, United States

This work, in collaboration with a large hospital system in Massachusetts, USA, tackles the patient prioritization and placement aspects of emergency department operations with the goal of improving throughput and wait times in an equitable way. We present a novel predictive-prescriptive framework and demonstrate increased fairness in patient prioritization.

115-1711 Improve Health Equity Response during Pandemic

Yueran Zhuo, Assistant Professor, Mississippi State University, United States

Bingyan Hu, Assistant Professor, Mississippi State University, United States

Huaiyang Zhong, Assistant Professor, Virginia Tech, United States

The Coronavirus (COVID-19) pandemic hit the United States tremendously with the shock heavily fallen into the underrepresented communities. We want to help the health administrators to find the optimal strategy to serve these underrepresented communities. We solve a resource allocation problem using real survey data in the southern US states.


115-2000 Continuous Scoring Model for Fair Liver Transplant Allocation

Shubham Akshat, Assistant Professor, Tepper School of Business, United States

S. Raghavan, Professor, University of Maryland, United States

The United States (U.S.) Department of Health and Human Services is interested in increasing geographical equity in access to liver transplant. We develop a novel method to design heterogeneous scoring functions for continuous scoring policy in the deceased donor liver transplantation that equalizes supply to demand ratios across transplant centers.

Invited Session

Monday, 08:00 AM - 09:30 AM, Celebration 4	Track: Healthcare Operations Management
 Invited Session: Patient Flow in Hospitals	
Chair(s): Kellas Cameron	

115-0352 External Collaborative Coordination: Improving Efficiency in a Dedicated Observation Unit

Temidayo Adepoju, Assistant Professor, Rutgers Business School, United States

Anita Carson, Professor, Boston University, United States

Cherisse Carlo, Registered Nurse, Boston Medical Center, United States

Chris Manasseh, Professor, Boston Medical Center, United States

Observation units play an important role in hospital capacity and cost management. Our research investigates the efficiency in an observation unit driven by changes in the admission criteria of the unit.

115-1231 Does Healthcare Provider behavior drive opposition to Decision Support Technology Adoption in Hospital Environments?

Kellas Cameron, Assistant Professor, University of South Florida, United States

There is a distrust to using additional Healthcare IT by physicians. This comes from various sources, such as ineffective rollouts, lack of ease-of-use, increased administrative load, plus its relationship to medical error tracking. This study looks at why provider behavioral biases exist, and their effect on the technology adoption process.

115-1563 Deep Generative Modeling for Patient Census Prediction

Pengyi Shi, Associate Professor, Purdue University, United States

Monday, 08:00 AM - 09:30 AM

Tianchun Li, Student, Purdue University, United States

Patient census prediction is essential to hospital flow management and staffing decisions. However, challenges arise when predicting multi-day census time-series driven by correlated arrivals and discharges. We leverage state-of-art generative modeling and machine learning, integrated with patient flow dynamics, to design novel predictions and overcome these challenges.

Invited Session

Monday, 08:00 AM - 09:30 AM, Celebration 5	Track: Healthcare Analytics
5 Invited Session: Healthcare Analytics	
Chair(s): Deepa Goradia	

115-0072 The Role of RAS Experience on Surgical Outcome, Learning, and Forgetting in Conventional MIS

Pradeep K. Pendem, Assistant Professor, University of Oregon, United States

Sriram Narayanan, Professor, Michigan State University, United States

Vikram Tiwari, Associate Professor, Vanderbilt University Medical Center, United States

We explore the RAS experience effect on surgery duration, surgeon's learning, and forgetting in conventional MIS. We find the MIS duration has an inverted-U relationship with focal RAS experience. Next, we find low (high) focal RAS experience slows (aids) the MIS learning and decelerates (accelerates) the MIS forgetting.

115-0322 Managing General and Physician Preference Medical Supplies - Impact of Consignment-Stock Inventory Policies

Claudia Rosales, Assistant Professor, University of Arkansas - Fayetteville, United States

Anand Nair, Professor, Michigan State University, United States

Sukrit Pal, Assistant Professor, Iowa State University, United States

Hospitals manage different medical supplies, like general and physician preference items. General items are numerous and inexpensive, physician-preference items are expensive and less numerous. While consignment is used to reduce costs our analysis of hospital data shows consignment is not always beneficial. We develop analytical models to explain our results.

115-0847 Gender Diversity in Public Health Supply Chains

Amir Karimi, Assistant Professor, University of Texas at San Antonio, United States

Dwaipayan Roy, Assistant Professor, University of Virginia, United States

Drawing on past research showing that female decision-makers tend to prioritize issues "in ways that seem to better reflect women's preferences," we empirically evaluate the relationship between female decision-makers in governmental positions and procurement of reproductive health commodities in LMICs.

115-1191 Identifying the Source of Foodborne Disease Outbreaks Using Spatial Statistic Methods

Sandra Rudeloff, Student, Kuehne Logistics University, Germany

Hanno Friedrich, Associate Professor, Kuehne Logistics University, Germany

Foodborne diseases can have a massive impact on public health. The rapid identification of the contaminated food item and its source is vital to mitigate their proliferation. We present a spatial pattern comparison approach that has the potential to accelerate the time needed to identify possible sources.

115-2118 Optimal Resource Pooling for Future Operating Room Capacity Management

Seung-Yup (Joshua) Lee, Assistant Professor, University of Alabama Birmingham, United States

Vikram Tiwari, Associate Professor, Vanderbilt University Medical Center, United States

We investigate the optimal timing for release of unfilled operating room (OR) block capacity to improve OR use. A Markov decision process structure is designed that incorporates both the current availability of the OR block and expected upcoming surgery demand. We discuss the expected outcomes of the resulting policies.

Invited Session

Monday, 08:00 AM - 09:30 AM, Celebration 6	Track: POM-Finance Interface
6 Invited Session: Empirical Research in OM-Finance 1	
Chair(s): Nikolay Osadchiy	

115-0641 Supply Chain Resilience to the COVID-19 Lockdown

Yimeng Niu, Student, Shanghai Jiao Tong University, China

Vinod Singhal, Professor, Georgia Institute of Technology, United States

Jing Wu, Assistant Professor, The Chinese University of Hong Kong, Hong Kong, China

Using shipment data, this paper empirically uncovers two operational hedging behaviors among US shipments from China during 2022 Shanghai Lockdown. Shipments are either diverted to the largest nearby Ningbo Port or reallocated from the Yangtze River Delta to Pearl River Delta. Shanghai Lockdown also spatially spills over to inland suppliers.

115-0758 Portfolio Approach to Cash Flow Variability

Nikolay Osadchiy, Associate Professor, Emory University, United States

William Schmidt, Assistant Professor, Cornell University, United States

Jing Wu, Assistant Professor, The Chinese University of Hong Kong, Hong Kong, China

Monday, 08:00 AM - 09:30 AM

We propose customer portfolio management and selective trade credit as an operational hedge for reducing cash flow variability, and empirically validate this approach using a large database of customer-supplier relationships.

115-1539 Fragmentation and Visibility in Supply Networks

Nikolay Osadchiy, Associate Professor, Emory University, United States
Maximiliano Udenio, Associate Professor, KU Leuven, Belgium
Vishal Gaur, Professor, Cornell University, United States

We propose a strategy for establishing visibility into a multi-tier supply network that utilizes the fragmented structure of the network. Using the history of buyer-supplier relationship data, we show that effectiveness of the strategy increases as the supply network becomes more fragmented over time.

115-1544 Inventory Productivity and Stock Returns in Manufacturing Networks

Deepak Agrawal, Student, Emory University, United States
Nikolay Osadchiy, Associate Professor, Emory University, United States

We provide a novel, supply network-based perspective on inventory productivity and incentives for its improvement and show that the information about firm's position within the network is a valuable predictor of its inventory productivity and financial performance.

115-1985 Text-Based Measure of Supply Chain Risk Exposure

Andrew Wu, Assistant Professor, University of Michigan - Ann Arbor, United States

I develop and validate a firm-level measure of supply chain risk exposure from a novel source of unstructured data---managers' discussions of supply chain-related topics during earnings conference calls and Q&A sessions---using textual analysis techniques including seeded word embedding and bag-of-words-based content analysis.

Invited Session

M	Monday, 08:00 AM - 09:30 AM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: Supply Chain Strategies For Waste Mitigation	
	Chair(s): Haoying Sun Yunke Mai	

115-0350 Battery as a Service: Flexible Electric Vehicle Battery Leasing

Lingling shi, Student, UT Dallas, United States
Bin Hu, Associate Professor, Naveen Jindal School of Management, United States

We study flexible electric vehicle battery leasing, where customers lease their long-term batteries and can temporarily up/downgrade to different capacities for peak usage. We investigate whether and when profit-maximizing flexible battery leasing reduces total customer cost and/or total battery capacity compared with simple battery leasing.

115-0432 The Beauties in Selling Ugly Produce

Zheng Han, Assistant Professor, Depaul University, United States
Bin Hu, Associate Professor, Naveen Jindal School of Management, United States
Milind Dawande, Professor, University of Texas Dallas, United States

Using a game theoretic model, we investigate whether a marketplace exists or not for a dedicated retailer selling ugly produce, and the potential interventions or policies to prevent the creation of waste.

115-1051 Competitive Mass Customization: A Sustainability Perspective

Aydin Alptekinoglu, Professor, Penn State University University Park, United States
Adem Orsdemir, Assistant Professor, University of California Riverside, United States

The fashion industry has been heavily criticized for creating huge amounts of waste due to overproduction. To address this problem, mass customization (MC) has been proposed as a remedy. We investigate whether the adoption of MC lead to a win-win in a competitive setting.

115-1223 The First-Mile Problem in the Reverse Supply Chain of E-Waste

Yunke Mai, Assistant Professor, University of Kentucky, United States
Haoying Sun, Associate Professor, University of Kentucky, United States

We study the first-mile problem in the reverse supply chain of e-waste recycling using an evolutionary game theory framework. Our analysis establishes that utilizing existing retail channels could be generally effective in incentivizing consumer recycling, but such an approach may also have ambiguous effects that regulators should be aware of.

Invited Session

∞	Monday, 08:00 AM - 09:30 AM, Celebration 8	Track: Sustainable Operations Management
	Invited Session: Environmentally sustainable operations	
	Chair(s): Gokce Esenduran	

115-0498 Delivery Terms for Voluntary Carbon Offsets

Vishal Agrawal, Associate Professor, Georgetown University, United States
Gokce Esenduran, Assistant Professor, Purdue University, United States
Safak Yucel, Assistant Professor, Georgetown University, United States

Monday, 08:00 AM - 09:30 AM

A company may purchase carbon offsets under two delivery terms: Under prompt delivery, the seller has already generated offsets. Under forward delivery, the seller has not yet invested in a project. We answer which delivery term a buyer should prefer and which one leads to a higher environmental benefit.

115-1452 Does the Focus on Workplace Safety Improve Environmental Performance?

In Joon Noh, Assistant Professor, Penn State University, United States

Suresh Muthulingam, Professor, Penn State University University Park, United States

A large body of work has investigated the implications of OSHA inspections from economic and safety perspectives. But hardly any research explores the impact of OSHA inspections from an environmental perspective. We seek to bridge this gap by examining whether OSHA inspections affect the toxic releases of manufacturing facilities.

115-2018 Do Noisy Customer Reviews Discourage Platform Sellers? Empirical Analysis of an Online Solar Marketplace

Herbie Huang, Student, Kenan-Flagler Business School, United States

Nur Sunar, Associate Professor, Kenan-Flagler Business School, United States

Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States

Rahul Roy, Student, Kenan-Flagler Business School, United States

For this project, we collaborated with one of the largest online solar marketplaces in the U.S. that connects potential solar panel adopters with installers. We empirically study how the review dispersion affects a seller's activity level and the number of matches in an online marketplace with active sellers.

115-2152 Quality Costs of Fuel Efficiency Improvements in the Automobile Industry


Donggyu Jeon, Student, Indiana University Bloomington, United States

George Ball, Associate Professor, Indiana University Bloomington, United States

Gil Souza, Professor, University of Tennessee Knoxville, United States

In this study, we empirically examine the impact of firms' efforts to improve the environmental performance of a vehicle (measured as MPG) on product quality (measured as the number of quality complaints reported) in the automotive industry. We provide strategic and operational managerial implications of improving sustainability on product quality.

Invited Session

	Monday, 08:00 AM - 09:30 AM, Celebration 9	Track: Supply Chain Management
	Invited Session: Informational Issues in Supply Chains	
	Chair(s): Woonam Hwang	

115-0483 Partial demand information exchange between a retailer and an online platform

Eunji Lee, Student, Technische Universität München, Germany

Christopher Tang, Professor, University of California Los Angeles, United States

Stefan Minner, Professor, Technische Universität München, Germany

We investigate a seller conducting operations through her own channel and an online platform. While the seller observes her own demand through both channels, the platform has other competing sellers' demand information. We study the agents' incentive to exchange private and partial demand information and reduce forecast errors.

115-0505 Trade Credit or Wholesale Price? The Role of Information Sharing in Supply Chain Financing

Erbao Cao, Professor, Hunan university, China

Guangwen Kong, Associate Professor, Temple University, United States

Abhishek Roy, Assistant Professor, Temple University, United States

Jiamuyan Xie, Student, Hunan university, China

By extending trade credit to a capital-constrained retailer, a manufacturer can improve the financial performance of both firms. However, the existing literature assumes symmetric demand information, although in practice, the retailer often possesses private information. We examine the manufacturer's trade credit and the retailer's information-sharing decisions under such information asymmetry.

115-0616 Is Your Price Personalized? Alleviating Customer Concerns with Inventory Availability Information

Arian Aflaki, Assistant Professor, Joseph M. Katz Graduate School of Business, United States

Qian Zhang, Student, Katz Graduate School of Business, United States

Customers are concerned about personalized pricing (PP) tactics. Using a Bayesian persuasion framework, we study whether and under what conditions price can signal such PP implementation to customers. We also investigate whether disclosing inventory availability information can alleviate customer concerns and benefit the firm and customers.

115-1213 Blackwell Sufficiency of Assortments

Dorothee Honhon, Associate Professor, University of Texas Dallas, United States

Bharadwaj Kadiyala, Assistant Professor, University of Utah, United States

Canan Ulu, Associate Professor, Georgetown University, United States

Motivated by settings in which a consumer's consideration set (i.e., the subset of products considered prior to purchase) is observable, we investigate how a decision maker should offer product assortments to maximize profit while also learn about consumer preferences. We characterize the optimal assortment using the notion of (Blackwell) sufficiency.

Monday, 08:00 AM - 09:30 AM

Invited Session

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Monday, 08:00 AM - 09:30 AM, Celebration 10

Track: Supply Chain Management

Invited Session: Industry-inspired New supply chain models

Chair(s): tianhu deng

115-0442 Increasing Supply Chain Resilience through Bill-of-Materials Flexibility in an Assemble-to-Order System

Tianhu Deng, Associate Professor, Tsinghua University, China

Feiyu Shao, Student, Tsinghua University, China

Jing-Sheng Song, Professor, Duke University Durham, United States

Yi Yu, Student, Tsinghua University, China

We study an Assemble-to-Order manufacturer's inventory control under component substitution. When a product cannot be assembled due to the shortage of a component, a common industrial practice is to replace the missing component with a substitute component. We aim to identify the optimal substitution policy

115-0447 Dynamic Inventory Management under Total Business Volume Commitment Contracts

Tong Wang, Associate Professor, Shanghai Jiao Tong University, China

Quan Yuan, Associate Professor, Zhejiang University, China

Sean Zhou, Professor, Chinese Univ of Hong Kong, Hong Kong, China

We study a joint inventory management problem for multiple products under a minimum total business volume commitment contract over a finite planning horizon. We characterize the structure of the optimal policy for the model with two products and also provide effective heuristics for general cases.

115-1362 Inventory and Supply Chain Management with Auto-Delivery Subscription

Shi Chen, Associate Professor, Michael G. Foster School of Business, United States

Kamran Moynadeh, Professor, University of Washington, United States

Junfei Lei, Student, University of Washington, United States

Auto-delivery is a subscription model in supply chains, whereby a supplier delivers products to a buyer (or multiple buyers) according to the buyer's choice of a constant shipping quantity to be delivered at prescheduled dates. The buyer enjoys a discount for the auto-delivery orders and free cancellation.

115-1941 Blockchain Applications in Maritime Supply Chain

Ling Li, Professor, Old Dominion University, United States

Li Da Xu, Professor, Old Dominion University, United States

Blockchain is a new and disruptive technology that is useful for transforming the maritime and shipping business process. Blockchain has great potential in helping shippers, carriers, brokers, and other stakeholders in the shipping supply chain track related paperwork with tamper-resistant digital records and cargos.

Invited Session

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Monday, 08:00 AM - 09:30 AM, Celebration 11

Track: Social Media and Web 2.0

Invited Session: Cryptocurrency, Healthcare, and Fairness

Chair(s): Xiang(Shawn) Wan

115-0612 Observational Learning in Cryptocurrency Trading

Ye Liu, Student, University of Washington, United States

Mingwen Yang, Assistant Professor, University of Washington, United States

Matthias Pelster, Professor, Paderborn University, Germany

Social media, with a wide range of individual information providers, also attracts many discussions regarding cryptocurrencies. In this paper, we investigate whether cryptocurrency adoption is influenced by information received from social media and networks, and---if so---what specific factors affect one's adoption choice of cryptocurrencies.

115-1411 Group Fairness in Online Platform's Assortment Planning

Shuzhang Cai, Student, University of Texas at Dallas, United States

Shaojie Tang, Associate Professor, The University of Texas at Dallas, United States

Recently there arises the concern about fairness regarding recommendation systems, e.g., disadvantaged items receive little exposure due to the unpopularity. We present a framework that has group fairness constraints and keeps maximizing the clickthrough rate as the platform's objective. Our approach provides a series of near-optimal solutions within polynomial time.

115-1474 Novel Pooling Strategies for Genetic Testing, with Application to Newborn Screening

Hussein El Hajj, Assistant Professor, Santa Clara University, United States

Douglas Bish, Professor, University of Alabama, United States

Ebru Bish, Professor, University of Alabama, United States

Cystic fibrosis is a life-threatening genetic disorder. Most screening processes start with a biomarker test, followed by more expensive and accurate genetic testing. To overcome the cost barriers, we explore a novel multi-panel pooling problem, that involves selection and partition of variants for screening, and selection of pool sizes.

Monday, 08:00 AM - 09:30 AM

115-1830 Relationship Between Patient Satisfaction and Physician Overprescription: Evidence from Online Reviews and CMS Claim Data

Junjie Luo, Student, School of Medicine, United States
Aishwarya Shukla, Assistant Professor, Beedie School of Business, Canada
Jie Mein Goh, Associate Professor, Beedie School of Business, Canada
Guodong "Gordon" Gao, Professor, Carey Business School, United States
Ritu Agarwal, Professor, Carey Business School, United States

Physicians with complaisant personalities might be reluctant to deny a patient's unreasonable overprescription requests for substances such as opioids. We use online physician reviews to infer the physicians' personality and use CMS claim data to detect overprescription behaviors. We study the effects of physician personality on overprescription.

Invited Session

12	Monday, 08:00 AM - 09:30 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Logistics capacity building in humanitarian operations and crisis management	
	Chair(s): Marianne Jahre	

115-0449 The Impact of Postponement and Stock Sharing Strategies on Prepositioned Relief Stocks

Lamia Gulnur Kasap-Simsek, Student, Ozyegin University, Turkey
Burcu Balcik, Associate Professor, Ozyegin University, Turkey

We evaluate effects of postponement and stock-sharing practices among humanitarian agencies that preposition supplies in a depot using a Monte-Carlo simulation model. We test our approach using historical hurricane scenarios from the Caribbean region and data from agencies. We demonstrate significant savings in fill rate, response time, and inventory utilization.

115-0976 Artificial Intelligence in the Service of Humanitarian Operations

Kiran Busch, Student, Kühne Logistics University, Germany
Olaf Steenberg, Senior Data Analyst, International Federation of Red Cross and Red Crescent Societies, Switzerland
Maria Besiou, Professor, Kuehne Logistics University, Germany
Henrik Leopold, Associate Professor, Kühne Logistics University, Germany

In this paper, we build on a dataset from the International Federation of Red Cross and Red Crescent Societies and use machine-learning models to predict required budgets for disaster response operations. We then employ techniques from the field of explainable-artificial-intelligence to identify the factors that influence the budget appeal.

115-1212 A quantitative approach to partner selection in humanitarian-business partnerships

Ali Ghavamifar, Student, University of Tehran, Iran (Islamic Republic of)
Mohammad Moshtari, Associate Professor, Tampere University, Finland

Considering both the benefits and risks of humanitarian-business partnerships, a quantitative approach is proposed to facilitate partner selection for NGOs and businesses. The proposed method adopts Best Worst Method (a multi-criteria decision-making method) and uses interview data from ten partnerships among international NGOs and businesses.

115-1912 International Humanitarian Organizations' Perspectives on Localization Efforts

Lina Frennesson, Student, Lund University, Sweden
JOAKIM KEMBRO, Associate Professor, Lund University, Sweden
Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands
Marianne Jahre, Professor, BI Norwegian Business School, Norway
Luk Van Wassenhove, Professor, INSEAD, France

The humanitarian sector has formulated a collective strategic intent to localize, aiming at empowering national and local actors in humanitarian aid. However, so far, humanitarian organizations have failed to turn intent into implementation. To suggest remedies, we investigate drivers and barriers for humanitarian organizations to localize their logistics preparedness capacities.

115-1918 Hurricane Shelter Opening: Intelligent Decision Support System using DRL

Attila Hertelendy, Associate Professor, Florida International University, United States
Min Chen, Associate Professor, Florida International University, United States
Karlene Cousins, Professor, Florida International University, United States

Prior to a hurricane's arrival, a critical strategic decision that emergency managers face is when to open which shelters to host vulnerable populations. Recent advances in Artificial Intelligence (AI) such as Deep Reinforcement Learning (DRL) can be introduced to optimize shelter opening strategies during a

Invited Session

13	Monday, 08:00 AM - 09:30 AM, Celebration 13	Track: Teaching/Pedagogy in POM
	Invited Session: Tutorial: Exploring Ways to Make Your Operations Management Course More Exciting	
	Chair(s): Barry Render Jay Heizer	

115-1890 Exploring Ways to Make Your Operations Management Course More Exciting

Barry Render, Emeritus Professor, Rollins College, United States
jay heizer, Emeritus Professor, Ops Mgt, United States

Monday, 08:00 AM - 09:30 AM

Charles Munson, Professor, Washington State University Pullman, United States

This interactive tutorial session features leading OM text authors with 140 years of combined classroom experience. They will discuss teaching techniques including integrating videos, data analytics, their blog, podcasts, and software to present a more real-world course for students. Attendees will be invited to share and discuss their own approaches.

Invited Session

14	Monday, 08:00 AM - 09:30 AM, Celebration 14	Track: Service Operations
	Invited Session: Diversity, Equity, and Inclusion research in Operations Management	
	Chair(s): Kejia Hu Lu Kong	

115-1921 Gender and Race Differences in Online Education in the U.S

Lu Kong, Assistant Professor, University of South Florida, United States

Kejia Hu, Assistant Professor, Vanderbilt University, United States

Although most U.S. universities moved back to in-person teaching now, higher education stills shows a trend of moving online. In this paper, we explore the influence of the instructors' demographic characteristics on education quality. We find that gender and race together have a significant impact on teaching evaluations.

115-1925 How Women Promote Greater Social Responsibility on Social Media

Xiang Li, Student, TianJin University, China

Kejia Hu, Assistant Professor, Vanderbilt University, United States

Huabin Du, Professor, Tianjin University, China

As social media has become a primary vehicle for communication, it has significant potential to enable the spread of social responsibility in response to pressing issues. We are interested in which participants in terms of gender have the highest likelihood of driving increased social responsibility via social media.

115-1961 Managing The Personalized Order-Holding Problem in Online Retailing

Shouchang Chen, Assistant Professor, Zhejiang University, China

Yun Fong Lim, Associate Professor, Singapore Management University, Singapore

Zhenzhen Yan, Assistant Professor, Nanyang Technological University, Singapore

A significant percentage of online consumers place consecutive orders within a short duration. To reduce the total order arrangement cost, an online retailer may consolidate consecutive orders from the same consumer. We investigate how long the retailer should hold the consumer's orders before sending them to a third-party logistics provider.

115-2153 When Harry Won't Meet Sally: Gender Disparity in Online Learning Platforms

Zhihan (Helen) Wang, Student, University of Michigan, Ann Arbor, United States

Jun Li, Associate Professor, Ross School of Business, United States

Andrew Wu, Assistant Professor, Ross School of Business, United States

Utilizing a large-scale, interaction-level dataset on Coursera, we uncover a noted gender disparity in learners' interaction with the teaching staff. Also, we show that receiving staff response in forum leads to significant improvement in course passing rate. Our results provide direct managerial implications to platform managers and course providers

Invited Session

15	Monday, 08:00 AM - 09:30 AM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Economics of IS and OM	
	Chair(s): Lin Hao	

115-1286 Contract Design for Cloud Services with Privacy and Security Concerns

Hongyan Xu, Professor, Chongqing University, China

Ying Wang, Student, Chongqing University, China

Mingrui Zhang, Student, University of Washington, United States

Protecting cloud data privacy and security is the shared responsibility of clients and cloud service providers. With data privacy and security have attracted more and more attention over the last decade, our research concentrates on the optimal contract design, including the pricing, liability and data licensing in cloud services.

115-1308 Return-Inducing Crowdfunding and Newsvendor

Shi Chen, Associate Professor, Michael G. Foster School of Business, United States

Kamran Moynzadeh, Professor, University of Washington, United States

Haonan Zhang, Student, University of Washington, United States

This paper investigates how firms advertise financial returns that affect fundraising and production under different fundraising (Keep-it-all and All-or-Nothing) and return-allocation mechanisms (debt and profit sharing). We prescribe analytical insights for the firms to holistically make fundraising and production decision that leads to optimal profit.

115-1758 Product Rankings, AI Pricing Algorithms and Collusion

Liyang Qiu, Student, Carnegie Mellon University, United States

Monday, 08:00 AM - 09:30 AM

Yan Huang, Assistant Professor, Carnegie Mellon University, United States

Param Singh, Professor, Carnegie Mellon University, United States

We investigate the impact of ranking systems, a common feature of online marketplaces, on algorithmic collusion. We show experimentally and analytically that personalization or utility-based ranking will facilitate algorithmic collusion significantly. Our results show that when consumers share more data, they are worse-off even without price discrimination.

115-1780 Algorithms, Artificial Intelligence and Simple Rule-Based Pricing

Qiaochu Wang, Student, Carnegie Mellon University, United States

Yan Huang, Assistant Professor, Carnegie Mellon University, United States

Param Singh, Professor, Carnegie Mellon University, United States

Automated pricing comes in two forms - rule-based and artificial intelligence (AI) powered algorithms. Through extensive pricing experiments in a workhorse oligopoly model of repeated price competition, we show that a firm's best response to its competitor's AI powered algorithms is simple rule-based algorithm.

Invited Session

16	Monday, 08:00 AM - 09:30 AM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Social and Environmentally Relevant Operations	
	Chair(s): Jayashankar Swaminathan Jayashankar Swaminathan	

115-0283 Optimal Investment of Farming Mechanization under Limited Budget

Ying Zhang, Assistant Professor, Clemson University, United States

Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States

We study a farmer's optimal investment policy for a single crop under budget and land size constraints. Using a Cobb-Douglas function to model the crop production, we show that the optimal investment policy is a threshold-type policy where the farmer should invest up to the optimal investment threshold.

115-1700 The state of supplier diversity initiatives for large corporations

Gemma Berenguer, Assistant Professor, Universidad Carlos III de Madrid, Spain

Anna Saez De Tejada Cuenca, Assistant Professor, IESE Business School, Spain

Using data from the 2020 Global Fortune 500 companies, we study the extent to which supplier diversity practices are widespread, and whether some firm characteristics make companies more likely to have supplier diversity initiatives. The two types of initiatives are supplier diversity programs and supplier code of conduct diversity policies.

115-1706 An Optimization Approach to Global Health Financing

Iva Rashkova, Assistant Professor, Washington University, United States

Global health financing to both public and private providers has been under scrutiny in recent years. We consider the financing channels and operational levers available to a financial donor. For a fixed budget available, we optimize the donor's budget allocation decision across channels based on time-horizon and health outcomes.

Invited Session

17	Monday, 08:00 AM - 09:30 AM, Coral Spring 2	Track: Emerging Topics in Operations Management
	Invited Session: Emerging Topics in Operations Management	
	Chair(s): Sining Song	

115-0489 Cardless and Cashless Future: The Rise of Mobile Payment

Kejia Hu, Assistant Professor, Vanderbilt University, United States

Shuai Ling, Associate Professor, Tianjin University, China

Shoufeng Ma, Professor, Tianjin University, China

Sriram Venkataraman, Associate Professor, University of South Carolina, United States

This study aims to investigate, with real-world transaction data, how consumers migrate from existing channels and adopt Mobile Payment under a multichannel payment system. Our results indicate that the introduction of Mobile Payment draws consumers away from incumbent channels and that promotion magnifies this migration flow.

115-0604 Building Resilience in High Customer-Contact Services in the Post-Covid Era: A Study of Restaurants

Hongli Ye, Student, Clemson University, United States

Aleda Roth, Professor, Clemson University, United States

Ying Zhang, Assistant Professor, Clemson University, United States

Closures and limited access adversely impacted customer-facing contact services during the early phases of COVID. Using experiments, we ask: Will service operations' strategic choices to adopt CDC guidelines motivate customers' return to in-restaurant dining and what are the underlying mechanisms that contribute to various customer reactions to CDC guidelines.

115-0903 Better than Cash? Merchant Payment Services and Mobile Network Operator Performance

Sining Song, Assistant Professor, University of Tennessee Knoxville, United States

Fan Zou, Assistant Professor, Florida State University, United States

Monday, 08:00 AM - 09:30 AM

Yan Dong, Professor, University of South Carolina, United States

We examine the role of mobile merchant payment (MMP) as a unique two-sided market service in the financial growth and inclusion effect of mobile network operators (MNOs). We further identify three bundling strategies for MNOs to increase MMP value when pricing mechanisms are limited for markets with financially-derived users.

115-1470 On the Frontline: Engaging Health Workers to Improve the Last-mile Availability of Health Commodities in

Anant Mishra, Associate Professor, University of Minnesota, United States

We examine factors that affect the effectiveness of health worker training using the staggered roll-out of a public health supply chain initiative launched in Indonesia called The MyChoice Project. The initiative was launched in 2016 with the objective of mitigating the last-mile stock-outs of contraceptive methods in Indonesia.

Invited Session

18	Monday, 08:00 AM - 09:30 AM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Supply Chain Risk Management: Sourcing, SC Analytics, SC Finance, and Environmental Issues	
	Chair(s): Yao Zhao	

115-0073 The Effect of Supply Uncertainty on Dynamic Procurement and Pricing Strategies under Lost Sales

Qi Feng, Professor, Purdue University, United States

Lei Li, Student, Purdue University, United States

George Shanthikumar, Professor, Purdue University, United States

We consider a joint inventory-pricing control problem under lost sales and uncertain supply, an important but challenging problem because of non-concave value-to-go functions. We apply the notions of stochastic functions to analyze a class of intuitively appealing policies that leads to rich insights into this problem.

115-0216 Supply Chain Analytics: from problem solving to problem discovery

Yao Zhao, Professor, Rutgers University, United States

I will showcase descriptive and diagnostic analytics for data driven problem discovery in supply chain and risk management.

115-1050 SMEs' Equality through Trade Credit Distribution

Wenting Li, Student, Arizona State University, United States

Violet (Xinying) Chen, Assistant Professor, Stevens Institute of Technology, United States

Rui Yin, Associate Professor, Arizona State University Tempe, United States

Over 95% of companies in supply chains are small/medium-sized enterprises (SMEs) whose survival and development are crucial for stabilizing the whole chain. Prior research has studied the survival aspect. We explore SMEs' development and analyze trade credit distribution with the fair allocation of development opportunities as a primary goal.

115-1172 Carbon Disclosure & Emission Outsourcing

Yilin Shi, Student, The Chinese University of Hong Kong, China

Christopher Tang, Professor, University of California Los Angeles, United States

Jing Wu, Associate Professor, The Chinese University of Hong Kong, Hong Kong, China

We study the effect of carbon disclosure on carbon emissions of different sources. Firms who make carbon disclosure have less own emissions, but such reduction is at the cost of increasing emissions from upstream suppliers. Mandatory environmental reporting regulations help mitigate such carbon transferring.

Invited Session

19	Monday, 08:00 AM - 09:30 AM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research in Operations-Finance Interface	
	Chair(s): Hyun Seok (Huck) Lee Youngsoo Kim	

115-0096 Nonfungible tokens: how to match supply with demand in the metaverse

Dmitrii Sumkin, Post Doc/Researcher, University of Illinois Urbana-Champaign, United States

Pavel Kireyev, Assistant Professor, INSEAD, France

Serguei Netessine, Professor, The Wharton School, United States

We study the supply design in NFT markets using transactional data from Decentraland marketplace. We build a structural model to quantify the trade-off between price and liquidity given the non-linearity in the expected gain from reselling. We find that with "token sales" policy, platform revenue may increase by 8.3%.

115-0182 The impact of financial distress on forecasting behavior in supply chains

Marco Ratusny, Student, Technical University of Munich, Germany

David Wuttke, Assistant Professor, Technische Universität München, Germany

Max Schiffer, Associate Professor, Technical University of Munich, Germany

We demonstrate econometrically that financial distress can drive more random forecasting behavior. The increased randomness, in turn, can lead to worse performance.

Monday, 08:00 AM - 09:30 AM

115-0440 The Impact of COVID-19 on Supply Chain Credit Risk

Senay Agca, Associate Professor, George Washington University, United States

John Birge, Professor, University of Chicago, United States

Ziang Wang, Assistant Professor, PolyU, Hong Kong, China

Jing Wu, Associate Professor, The Chinese University of Hong Kong, Hong Kong, China

We examine multi-regional supply chain risk by focusing on credit risk measured by CDS spreads and US-China supply chain networks. We find that local risks propagate through global supply chains to other regions. We further discuss the factors intensifying or mitigating the risk propagation.

115-1341 Buyer's Bankruptcy Risk, Sourcing Strategy, and Firm Value: Evidence from the Supplier Protection Act

Karca Aral, Assistant Professor, Syracuse University, United States

Erasmus Giambona, Professor, Syracuse University, United States

Ye Wang, Associate Professor, University of International Business and Economics, China

We study distressed buyers' sourcing strategy exploiting a quasi-natural experimental setting provided by the Supplier Protection Act. Our results suggest that right-sizing the supply base can be critical for buyers near financial distress, and implementing policies to engage and protect suppliers can be the way out of distress.

Invited Session

20

Monday, 08:00 AM - 09:30 AM, Rainbow Spring 1

Track: Empirical Research in Operations Management

Invited Session: **Healthcare and Public Policy**

Chair(s): Mei Li

115-0315 What makes product defects toxic?

Fereshteh Vahidi, Student, university of Geneva, Switzerland

Marcel Paulssen, Professor, university of Geneva, Switzerland

Ramesh Roshan Das Guru, Student, Indian Institute of Management Bodh Gaya, India

This study aims to generate insights into how characteristics of product defects (i.e., severity of the defect, hard vs. soft defect and product age when the defect occurs) trigger constructive customer reactions such as complaining and destructive customer reactions such as boycotting mediated through customer attributions of responsibility and stability.

115-0512 Firms' Engagement in Climate Change Policy: A Typology

Zhenzhen Yan, Assistant Professor, Idaho State University, United States

Sriram Narayanan, Professor, Michigan State University, United States

Tobias Schoenherr, Professor, Michigan State University, United States

We propose and validate a typology for firms' engagement strategies by performing text analysis on firms' self-disclosed information. Our findings reveal the multiplicity of public policy implications, responding to the call for more investigation on policy issues from an operations and supply chain management perspective.

115-1698 Empirical Investigation of the Valuation Premium Effect of Target Firms' Operations Capability in M&As

Mehdi Nezami, Assistant Professor, Bradley University, United States

Sara Rezaee Vessal, Assistant Professor, ESSEC Business School, France

Ali Shantia, Associate Professor, Toulouse Business School, France

Valuation of target firms in M&As has far-reaching implications for shareholder wealth. We investigate how a target's operations capability affects the valuation premiums it receives from the acquiring firm in an M&A. We find that target firms' operations capability positively affects their M&A valuation premiums.

115-1805 Doing Well by Doing Good or Doing Good Because of Doing Well?

Mei Li, Associate Professor, University of Oklahoma, United States

John Ni, Assistant Professor, Miami University, United States

In this study, we investigate hospitals in the United States that offer a varying extent of indigent care services. We explore the interplay between hospital profit and indigent care services. Further, we examine the effects of market competition in moderating the relationship.

Invited Session

21

Monday, 08:00 AM - 09:30 AM, Rainbow Spring 2

Track: Operational Excellence

Invited Session: **Panel: Business Process Management, Process Redesign and Improvement**

Chair(s): Jamison Kovach

115-1727 Panel: Business Process Management, Process Redesign and Improvement

Jamison Kovach, Professor, University of Houston, United States

Sue Conger, Emeritus Professor, University of Dallas, United States

Lawrence Fredendall, Professor, Clemson University, United States

Matthew Hu, Lecturer, University of Houston, American Samoa

Monday, 08:00 AM - 09:30 AM

While BPM encompasses many tools/methods for business process change, it would be more effective as a comprehensive discipline. During this session, expert panelists will share insights regarding how to integrate different approaches to business process change that are often used in silos to create a consolidated synthesis of modern BPM.

Invited Session

22	Monday, 08:00 AM - 09:30 AM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Frontiers in Revenue Management and Assortment Optimization	
	Chair(s): Zhen Chen Heng Zhang	

115-0212 Assortment Optimization with Multi-Item Basket Purchase under the Multivariate MNL Model.

Chengyi Lyu, Student, University of Colorado Boulder, United States

Stefanus Jasin, Associate Professor, University of Michigan, United States

Sajjad Najafi, Assistant Professor, Hec Paris, France

Huanan Zhang, Assistant Professor, University of Colorado Boulder, United States

We incorporate customer's multi-item purchase behavior into the assortment optimization problem. We consider both the uncapacitated and capacitated assortment problems under the so-called Multivariate MNL model. We show the structure of the optimal assortment and develop FPTAS for several variants of (capacitated and uncapacitated) assortment problems under MVMNL.

115-0888 Assortment optimization with Bulk Returns

Sahika Sahan, Student, Washington University in St. Louis, United States

Jacob Feldman, Associate Professor, Washington University St Louis, United States

We consider a two stage customer choice model in which customers first choose a subset of the offered products to order, before trying out each ordered product and ultimately purchasing their most preferred, while returning the rest. We consider the assortment optimization problem under this nuanced picture of choice behavior.

115-0896 Multi-Objective Assortment Optimization: Profit, Risk, Customer Utility, and Beyond

Zhen Chen, Student, Arizona State University, United States

Heng Zhang, Assistant Professor, Arizona State University, United States

Hongmin Li, Professor, Arizona State University Tempe, United States

Scott Webster, Professor, Arizona State University Tempe, United States

We study assortment optimization with a linear combination of convex functions of a purchase-probability-weighted sum as the objective. Despite the nonlinearity of the problem, we show that one can recast it into a purchase-probability-weighted sum of pseudo-revenues. This reformulation allows us to design efficient algorithms to solve the multi-objective problem.

115-1913 Hybrid Model for Sequential and Simultaneous Choice with Search Cost

Ruxian Wang, Professor, Johns Hopkins University, United States

We combine the classic sequential search model with the famous simultaneous discrete choice model, and develop a unified framework to investigate the impact of search cost on the sequential and simultaneous choice behavior.

Invited Session

23	Monday, 08:00 AM - 09:30 AM, Barrel Spring 2	Track: POM-Marketing Interface
	Invited Session: Research in Service and Health with Evidence from Practice	
	Chair(s): Yuqian Xu Zhanzhi Zheng	

115-0885 The Value of Operational Transparency: Empirical Evidence from the Food Delivery Platform

Zhanzhi Zheng, Student, UNC Kenan-Flagler Business School, United States

Yuqian Xu, Assistant Professor, UNC Chapel Hill, United States

Bradley Staats, Professor, University of North Carolina Chapel Hill, United States

Operational transparency permits service providers to build trust with customers. In July 2021, Zhejiang province published a regulation that online restaurant shows real-time food preparation processes online. Using a novel data-set of restaurants we use this policy change to investigate how operational transparency impacts restaurants' business performance.

115-0900 The Value of Customer-Related Information on Service Platforms: Evidence From a Large Field Experiment

Zhiyu Zeng, Student, Tsinghua University, China

Nicholas Clyde, Student, Washington University in St. Louis, United States

Hengchen Dai, Assistant Professor, University of California Los Angeles, United States

Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

Max Shen, Professor, University of California Berkeley, United States

We conducted a field experiment on a live-streaming platform by providing viewer-related information to treatment broadcasters. Our analyses demonstrate that relative to control broadcasters, treatment broadcasters expanded service capacity via increasing both show frequency and show length. Moreover, our intervention increased service enjoyment. Additional analyses shed light on the mechanisms.

115-1003 Worker Experience and Donor Heterogeneity: The Impact of Charitable Workers on Donors' Blood Donation Decisions

Wilson Lin, Assistant Professor, Santa Clara University, United States

Monday, 08:00 AM - 09:30 AM

Feng (Susan) Lu, Associate Professor, Purdue University, United States

Tianshu Sun, Associate Professor, University of Southern California, United States

How can charitable organizations' staff members be effectively positioned to donate more during their in-person interactions? Using a unique dataset at the nurse-donor interaction level, we analyze the role of nurses' experiences in driving charitable productivity and explore the downstream effects of the donation volume outcome.

115-1390 Value of Autonomous Last-mile Delivery: Evidence from Alibaba

Brian Han, Assistant Professor, University of Illinois at Urbana Champaign, United States

Meng Li, Associate Professor, University of Houston, United States

Yanan Zhang, Student, Shanghai Jiao Tong University, China

Using package-level data from three universities, we estimate the economic impact of autonomous vehicles on consumer behavior and operational efficiency. Using a difference-in-differences approach coupled with matching, we find that compared with self-pickup customers, adopters of autonomous last-mile delivery increased orders by 10% and decreased last-mile delivery time by 5%.

Invited Session

24	Monday, 08:00 AM - 09:30 AM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Consumer-driven operations management	
	Chair(s): Yimin Wang Rui Yin	

115-0077 Strategic Inventories in Competitive Supply Chains under Bargaining

Lucy Chen, Associate Professor, National University of Singapore, Singapore

Weijia Gu, N/A, Thermo Fisher Scientific, China

Qinshen Tang, Assistant Professor, Nanyang Technological University, Singapore

Strategic inventory refers to the inventory held purely out of strategic considerations other than operational reasons. In this paper, we investigate the roles of strategic inventory in a system with two parallel supply chains under both full bargaining and partial bargaining, which differ in whether inventory is a bargaining term.

115-0085 Consumer Profiling with Inventory Rationing

Ke Mao, n.a., Deppon Express, China

Jing Liu, Assistant Professor, Zhejiang University of Finance and Economics, China

Tao Lu, Assistant Professor, University of Connecticut, United States

Ke Fu, Professor, Sun Yat-Sen University, China

We examine a selling firm's inventory decision when the firm engages in consumer profiling and targeted pricing. Consumers decide whether to hide identities; not hiding, a consumer may disclose his/her true valuation to the firm but will have access to the product earlier than others.

115-0339 Selling Professional Products with Expertise Migration Uncertainty

Jane Gu, Associate Professor, University of Connecticut, United States

Pingfan Wang, Student, University of Science and Technology of China, China

Rachel Chen, Professor, University of California Davis, United States

For professional products such as musical instruments and sports gear, a consumer's quality preference is positively associated with her expertise level. Nonetheless, the outcome of professional training is highly uncertain. This paper examines a firm's strategies to sell professional products when consumer expertise migrates with uncertainty.

115-0881 Discrete Choice Model with Habituation

Binghan Kou, Post Doc/Researcher, Arizona State University Tempe, United States

Hongmin Li, Professor, Arizona State University Tempe, United States

In this paper, we explore the optimal price for firms by incorporating the habituation-based willingness-to-pay into a customer choice model. We first investigate the single-product case and extend it to the multiple-product case. We provide the state equilibrium and explore the consumption pattern. Moreover, we simulate and estimate the parameters.

Invited Session

25	Monday, 08:00 AM - 09:30 AM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Emerging Topics in Revenue Management	
	Chair(s): Dmitry Mitrofanov	

115-0978 Online Bipartite Matching with Advice: Tight Robustness-Consistency Tradeoffs for the Two-Stage Model

Billy Jin, Student, Cornell University, United States

Will Ma, Assistant Professor, Columbia University, United States

We study two-stage vertex-weighted bipartite matching problem with advice. We evaluate an algorithm by its robustness, which is its performance relative to that of the optimal offline matching, and its consistency, which is its performance relative to that of the advice. We characterize the tight robustness-consistency tradeoff for this problem.

115-1014 Dynamic Pricing with Menu Costs: Approximation Schemes and Applications to Grocery Retail

Jacob Feldman, Associate Professor, Washington University St Louis, United States

Monday, 08:00 AM - 09:30 AM

Danny Segev, Professor, Tel Aviv University, Israel

We study a multi-period, multi-product, dynamic pricing problem with price adjustment costs known as menu costs. Our first contribution consists of establishing fundamental hardness results for the dynamic pricing problem of interest. We identify grocery retail as a particular application domain whose distinguishing features allow us to develop an FPTAS.

115-1486 Boundedly Rational Choice with Symmetric Cannibalization

Yi-Chun Chen, Student, UCLA Anderson School of Management, United States

Dmitry Mitrofanov, Assistant Professor, Boston College, United States

We study a random set choice rule where the agents first preselect alternatives which satisfy agents' criteria and then randomly choose the alternative within preselected set of products. The model assumes that agents are boundedly rational and have limited cognitive abilities to precisely evaluate utilities of all the alternatives.

115-1919 Dynamic Population Tracking in Large Service Systems

Morgan Wood, Student, University of North Carolina Chapel Hill, United States

Fernando Bernstein, Professor, Duke University Durham, United States

N. Bora Keskin, Associate Professor, Duke University Durham, United States

Adam Mersereau, Professor, University of North Carolina Chapel Hill, United States

Serhan Ziya, Associate Professor, University of North Carolina Chapel Hill, United States

We develop asymptotically optimal policies to track queue lengths under different cost structures in a setting with inaccurate arrival and departure sensor data. We propose an idleness detection policy and explore the value of queue inspections. Our model is motivated by queue tracking implemented at a large airport.

Invited Session

27	Monday, 08:00 AM - 09:30 AM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Delivery Modes and Automation	
	Chair(s): Varun Gupta	

115-0499 Managing Autonomous Vehicle Technology and Service Level for Ride Sharing

Fei Qin, Associate Professor, Shippensburg University, United States

Saravanan Kuppusamy, Associate Professor, Rowan University, United States

We study Ride-Sharing (RS) Business that offers both Autonomous Vehicle (AV) and Conventional Vehicle (CV) services to consumers. We find that the incentive of RS to improve AV availability and affordability is stronger under a harsher market environment of the lower consumer AV evaluation than the higher one.

115-1473 Flexibility and automation as antidotes for employee overload? An empirical analysis in digital control rooms

Changyu Men, Student, IESEG School of Management, France

Maud Van den Broeke, Associate Professor, IESEG School of Management, France

Marijn Verschelde, Professor, IESEG School of Management, France

Workload and automation receive increasing attention in light of Industry 5.0. We examine how operators' (over)workload is influenced by their own and their peers' flexibility, and their use of automation. Our empirical analysis builds upon a purposefully constructed operational data set in a digital control room setting.

115-2074 Shipping consolidation with different delivery deadlines and modes: an analytical perspective

Varun Gupta, Associate Professor, University of North Georgia, United States

Shipping costs are a major cost to a company and many logistics service providers (e.g.; 3PL providers) promise significant savings on shipping costs to their customers. We explore how 3PL providers can utilize historical shipping data from their customers to implement shipping consolidation in real-time.

Contributed Session

28	Monday, 08:00 AM - 09:30 AM, Silver Spring 1	Track: Aviation and Transportation Operations
	Contributed Session: Smart Mobility and Sustainability	
	Chair(s): Amir Sadeghi	

115-0282 A Competitive Supply Chain Network Design with Dynamic Modified Stochastic p-Median Problem

Amir Sadeghi, Student, North Carolina State University, United States

Robert Handfield, Professor, North Carolina State University, United States

The DMS-p-MP problem incorporates two significant aspects that are not found in the conventional problem. Firstly, it takes into account the unpredictable and time-varying demand. Secondly, it permits the adjustment of facility locations within a specified limit on the number of modifications.

115-1414 The Impacts of Ride-hailing on Car Ownership under Individual Choice Endogeneity

Yuliu Su, Project Manager, Siemens, China

Ying Xu, Assistant Professor, Singapore University of Technology and Design, Singapore

Shih-Fen Cheng, Assistant Professor, Singapore Management University, Singapore

Costas Courcoubetis, Professor, Chinese Univ of Hong Kong (Shenzhen), China

Monday, 08:00 AM - 09:30 AM

We aim to quantitatively evaluate the impact of ride-hailing on car demand. We adopt an equilibrium choice model to study a heterogeneous population's choices on car ownership and transportation modes. We evaluate how driving costs and platform pricing schemes affect car ownership, platform profits, and environmental impacts.

115-2024 Drone for Transportation of Medical Supplies

Abhijeet Kumar, Student, University of North Texas, United States

Vikas Sangana, Student, University of North Texas, United States

In recent years drones or UAVs are occupying more and more space in the package delivery of medicaments. The objective of this study is to review the Medical supplies last-mile distribution to find a cost-efficient solution using a combination of modes of transportation to improve medical supplies availability.

Contributed Session

29	Monday, 08:00 AM - 09:30 AM, Silver Spring 2	Track: Inventory and Logistics Management
	Contributed Session: Inventory Policy Decisions - 1	
	Chair(s): Alan Pritchard	

115-0056 On the Optimality of (s,S) Policies for Managing Capacity, Inventory and Backorders

Melda Ormeci Matoglu, Assistant Professor, University of New Hampshire, United States

John Vande Vate, Professor, Georgia Institute of Technology, United States

We show that, under the assumptions that demand is the overriding source of variability and proportional changeover costs, an (s,S) policy that moves stepwise among the modes minimizes the long-run average cost. Examples illustrate that without these conditions, common assumptions about the optimal switching regions do not hold in general.

115-0841 Inventory model for fixed-life items with trapezoidal demand under credit financing

Bhavin J. Shah, Professor, Indian Institute of Management Indore, India

Arvind Shroff, Assistant Professor, Indian Institute of Management Lucknow, India

An inventory model is proposed for fixed life items with trapezoidal demand when retailer finances its inventory investment through trade credit. Model attempts to capture implications of the rapid growth or decline in demand resulting into lower or higher credit period using time value of money.

115-1790 Stockout-based Substitution and Fill Rates

Alan Pritchard, Assistant Professor, Texas Tech University, United States

Heidi Celebi, Student, Georgia Southern University, United States

Kevin Sweeney, Associate Professor, Sam Houston State University, United States

Philip Evers, Associate Professor, University of Maryland, United States

Most retailers make their inventory decisions around a desired service level, so it is important to understand how customer substitution behavior can influence different measures of customer service. This study proposes a decision tree approach for predicting realized item and category fill rates.

115-1811 Is it really optimum? Traditional Inventory Policies Behavior under Competition

Camil Martinez, Professor, University of Los Andes, Colombia

Carlos Erazo, Student, University of Los Andes, Colombia

The study attempts to understand if competition impacts the effectivity of classic inventory models implementations. Does the policy behave differently under different levels of competition? A design of experiments methodology is applied to a pseudo real simulated market to explore results. Preliminary results show that competition impacts bottom line results.

115-2035 Inventory Management and Firm Performance - A Frontier-Based Approach

Jerry Burke, Professor, Dept. of Logistics and SCM, Georgia South, United States

Rahul Nilakantan, Student, Georgia Southern University, United States

The relationship between inventory and firm performance is perplexing. A lean production view sees inventory is waste to minimize. However, lost sales and cascading disruptions can result from too little inventory. We empirically examine effects of inventory resource efficiency and slack on firm financial performance, using a joint estimation approach.

Invited Session

30	Monday, 08:00 AM - 09:30 AM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Platforms and Innovations	
	Chair(s): Brian Lee	

115-0020 Artificial Intelligence, Alliances, Drug Innovation

Bowen Lou, Assistant Professor, University of Connecticut, United States

We examine how artificial intelligence (AI) influences R&D alliances. Using a rich dataset on the biopharmaceutical industry, we show that firms with greater AI resources form more R&D alliances and generate more drugs per alliance. Furthermore, we show AI is particularly useful at facilitating inter-organizational knowledge flows in alliances.

115-0021 Impact of Cryptocurrency on Open-Source Software Communities

Brian Lee, Assistant Professor, Pennsylvania State University, United States

Monday, 08:00 AM - 09:30 AM

Jingchuan Pu, Assistant Professor, University of Florida, United States

We aim to examine the connection between cryptocurrency and open-source software (OSS), both of which stem from egalitarianism. We find that the OSS community is influenced by cryptocurrency market trends due to the attention paid by participants. Our study reveals the impact of cryptocurrencies on open-source innovations.

115-0024 Game for Brainstorm: The Impact of a Badge System on Knowledge Sharing

Lei Wang, Assistant Professor, Penn State University University Park, United States

Yifan Zhang, Assistant Professor, Kennesaw State University, United States

Yi-Jen (Ian) Ho, Assistant Professor, Penn State University University Park, United States

Platforms (i.e., Stack Overflow) have adopted badges to incentivize users to contribute high-quality content. We examine the dynamic impact of the hierarchical badge system from multiple angles, including badge categories, recency, and variety. This research extends our understanding of hierarchical gamification systems and offers insights from a system design perspective.

115-0101 Cloud Adoption, Firm Performance, and Innovation: Evidence from Labor Demand

Wang Jin, Post Doc/Researcher, Stanford Digital Economy Lab, United States

Using novel measures that capture cloud talent acquisition, we show that cloud adoption enhances productivity in US public firms. Further mechanism tests reveal that this effect is most pronounced in R&D intensive industries through lowering R&D expenditure and increase future patents, providing supporting evidence that cloud technology benefits firm innovation.

Contributed Session

31	Monday, 08:00 AM - 09:30 AM, Winter Park 50	Track: Socially Responsible Operations
	Contributed Session: Operations of Non-governmental Organizations	
	Chair(s): Serina Alhaddad	

115-0406 Enabling Socially Responsible Operations through Developing a Prosperity Scorecard

Serina Al-Haddad, Assistant Professor, Rollins College, United States

Beatriz Canamary, Assistant Professor, Rollins College, United States

Chris Barker, Student, Rollins College, United States

Nicole Kury, Student, Rollins College, United States

Casey Recci, Student, Rollins College, United States

This research aims to support the city of Winter Park in developing a Prosperity Scorecard to create a sustainable city through socially responsible operations. It analyzed qualitative and quantitative data related to prosperity, people, and planet. The components of the developed scorecards were: economic development, diversity/equity/inclusion, sustainability/environmental, and livability/quality

115-1340 Sustainability of Non-Profit UGC Platforms: The Role of Content Creation and Donations

Ziqi Dong, Student, Temple University, United States

Emre Demirezen, Assistant Professor, University of Florida, United States

Subodha Kumar, Professor, Temple University, United States

Content on non-profit user-generated content (UGC) platforms, such as Wikipedia, is generally created and maintained as open-collaboration projects by UGC communities who are also users of these platforms. We formulate a game-theoretical model to discuss the financial sustainability and content generation on non-profit UGC platforms.

115-1664 Defining Impact: a Case Study

Ana Rosado Feger, Associate Professor, Ohio University, United States

Grant development and donor recruitment and retention often requires describing the impact of programming. Not-for-profit organizations with diverse portfolios face the challenge of measuring and reporting impact in ways that are meaningful to their donor base or granting agencies. We consider a model for measuring and reporting impact.

115-1968 Growth Barriers Across Social Enterprises in India: A Critical Appraisal

Bhavani Shankar Saripalli, Associate Professor, Indian Institute of Management Indore, India

Vinaysingh Chawan, Assistant Professor, Indian Institute of Management Indore, India

This paper analyzes growth barriers faced by social enterprises working across various sectors in India. Socio-economic conditions during inception, finding and motivating the right beneficiaries, managing finances, recruitment and retention of human resources, and marketing of products have been identified as growth barriers. Suitable solutions have been proposed.

Invited Session

34

Monday, 09:45 AM - 11:15 AM, Celebration 1

Track: Retail Operations

Invited Session: **Studies in Managing Retail Consumer Interactions**

Chair(s): Yuanyuan Ding

115-0390 Flexible Consumer Return Policies and Rising Clearance Sales in Retailing: Can This Dual Trend Co-Exist?

Mehmet Altug, Associate Professor, George Mason University, United States

We study a two-period price-setting newsvendor problem with clearance pricing. In a store-clearance setting, we show that the retailer will be better off with lenient return policy while offering a lower clearance price when the second-period valuation is above a certain threshold. The same result holds with off-price clearance channel.

115-0929 Designing and Comparing Custom Interventions to Mitigate Product Returns: A Field Experiment Utilizing Clickstream Behavior

Ragip Gurlek, Student, Emory University, United States

Diwas KC, Professor, Emory University, United States

Paolo Letizia, Associate Professor, University of Tennessee, United States

With a series of experiments, we compare the effectiveness of interventions to mitigate e-commerce product returns. We leverage heterogeneity in sequential online browsing behavior by extracting latent characteristics with deep learning algorithms. We quantify user-level causal effects to customize intervention (encouraging virtual try-on, monetary incentive, or green nudge).

115-1576 Design of Curated Subscription Services in Retailing: Role of Transparency and Selection Process

Yuanyuan Ding, Student, University of Minnesota, United States

Karen Donohue, Professor, University of Minnesota, United States

Necati Ertekin, Assistant Professor, University of Minnesota, United States

Curated subscription services are gaining traction (e.g., Stitch Fix). While demand for this new business model is increasing, we observe in practice that curated-box retailers use different service designs to offer such services. In this study, we examine the performance of two service design features: collection transparency and selection process.

115-2011 How Does E-Retailer's Product Return Policy Leniency Influences Customer Satisfaction? Evidence from Walmart Marketplace

Quang (James) Huy Duong, Lecturer, Greenwich Business School, United Kingdom

Li Zhou, Professor, Greenwich Business School, United Kingdom

Tiep Duy Nguyen, Student, Greenwich Business School, United Kingdom

Meng Meng, Senior Lecturer, University of Bath, United Kingdom

This study applies data mining approaches on 13,757 e-retailers on Walmart. The results show the most lenient product return policy across four dimensions (time, monetary, effort and scope) does not lead to higher customer satisfaction, but it is the mix of certain leniency levels across these dimensions that does so.

Invited Session

35

Monday, 09:45 AM - 11:15 AM, Celebration 2

Track: Behavioral Operations Management

Invited Session: **New Topics in Behavioral Operations Management**

Chair(s): Arunima Chhikara

115-1543 Navigating the Pressures of a Call Center: A Longitudinal Study

Ahmad Ashkanani, Assistant Professor, Kuwait University, Kuwait

This study examines the relationship between different types of work stressors and their impact on the performance of call center agents. Using longitudinal data and empirical methods, we show that there is a significant interaction between work stressors, which impacts the productivity of servers as measured by their service time.

115-1603 Automation or Collaboration? Comparing Machine Learning with Integrated Learning for Demand Planning

Rebekah Brau, Assistant Professor, Brigham Young University, United States

Finnegan McKinley, Student, University of Arkansas - Fayetteville, United States

John Aloysius, Professor, University of Arkansas, United States

Enno Siemsen, Professor, University of Wisconsin, United States

Our research compares integrated forecasts (human judgment and algorithms) with unsupervised machine learning. We propose a novel method of integrating the three main components of analytics: technology, people, and processes. We test the components using field data and find the novel method improves on each of the components.

115-1973 Variations in Relative Performance Feedback: The Impact on Worker Performance

Aykut Turkoglu, Student, Boston University, United States

Anita Carson, Professor, Boston University, United States

This paper studies how different types of relative performance feedback (RPF) impacts worker output. We conduct a set of experiments to disentangle the effect of RPF on worker performance. Our research provides insights on the design of feedback to improve operational performance.

115-1984 Governing Platform Data Collection Behavior under Data Trading Context? A Tripartite Evolutionary Game Analysis

Jiayi Tao, Student, School of Economics and Management, China

Monday, 09:45 AM - 11:15 AM

Qin Zhou, Professor, Southeast University, Nanjing, China, China

By constructing a tripartite evolutionary game model consisting of the government, platform and a third-party data intermediary, this study aims to study the governance mechanism to regulate platform's behavior in data collection and its cooperation with a data intermediary through effective fines and reasonable tax policies.

Invited Session

36	Monday, 09:45 AM - 11:15 AM, Celebration 3	Track: Healthcare Operations Management
	Invited Session: Panel: Academia-Industry Collaborations in Research	
	Chair(s): Jonathan Helm Pengyi Shi	

115-2113 Panel: Academia-Industry Collaborations in Research

Jonathan Helm, Associate Professor, Kelley School of Business, United States

Pengyi Shi, Associate Professor, Purdue University, United States

This panel will focus on the experiences of academics collaborating closely with organizations in the healthcare industry. The goal is to have panelists that can discuss how they were able to engage with industry, what were some of the challenges and barriers they encountered and how they overcame them.

Invited Session

39	Monday, 09:45 AM - 11:15 AM, Celebration 6	Track: POM-Finance Interface
	Invited Session: Empirical Research in OM-Finance 2	
	Chair(s): kashish arora Kashish Arora	

115-1391 A Data-Driven Model of a Firm's Operations with Application to Cash Flow Forecasting

kashish arora, Student, Cornell University, United States

In this paper, we propose a generalizable and data-driven model of a firm's operations to disentangle this endogeneity and estimate causal impacts among variables. By estimating our model using quarterly public financial data from S&P's Compustat database for 1990-2020, we obtain several results.

115-1445 The Bullwhip Effect in Servitized Manufacturers

Yimeng Niu, Student, Shanghai Jiao Tong University, China

Shenyang JIANG, Post Doc/Researcher, Tongji University, China

Jing Wu, Associate Professor, The Chinese University of Hong Kong, Hong Kong, China

Zhibin Jiang, Professor, Shanghai Jiao Tong University, China

Through text mining on the 10-K filings of US-listed firms, we develop and validate a measure of manufacturers' business model upgradation to servitization. We provide robust empirical evidence that product-complementing services reduce demand variability and product-substituting services reduce the bullwhip effect.

115-1879 Market power and Robust Supply Chain

kashish arora, Student, Cornell University, United States

Amandeep Singh, Student, The Wharton School, United States

In this paper, we first estimate markups from publicly available compustat data. Then we use supply network data to understand the impact of supply chain metrics on companies market power.

Invited Session

40	Monday, 09:45 AM - 11:15 AM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: Frontiers in Sustainable OM	
	Chair(s): Tim Kraft Vincent (Junhao) Yu	

115-0189 Outcomes of carbon targets: Design and cost implications

Christian Blanco, Assistant Professor, Ohio State University, United States

Oznur Ozdemir, Assistant Professor, Sabanci University, Turkey

Erdinc Akyildirim, Associate Professor, University of Zurich, Turkey

We use ten years of data across 1,283 firms to compare the carbon and cost outcomes of companies that set voluntary carbon targets to those that do not. We provide recommendations on designing carbon targets to increase the likelihood of success.

115-0577 The Effects of CSR Performance and Price on Consumer Purchase Decisions: A Moderated Mediation Analysis

Vincent (Junhao) Yu, Post Doc/Researcher, North Carolina State University, United States

Tim Kraft, Associate Professor, 2801 Founders Dr, United States

Robert Handfield, Professor, North Carolina State University, United States

Rejaul Hasan, ?, Amazon.com, United States

Marguerite Moore, Professor, North Carolina State University, United States

Monday, 09:45 AM - 11:15 AM

We use a controlled experiment in an online purchase context to examine how consumers' willingness to buy is influenced by a retailer's disclosure of a manufacturer's CSR performance. We show that disclosing CSR performance is more challenging (and potentially riskier) with consumers who typically pay a higher price.

115-0598 Media Exposure and Supply Chain Labor Transparency in the Fashion Industry: The Role of Board

Veronica Villena, Associate Professor, Arizona State University, United States

Li Cheng, Assistant Professor, Michigan State University, United States

Understanding of factors driving supply chain transparency, particularly on labor and human rights, is nascent. We recognize media shaming as one such factor, and show that media controversies involving the firm can prompt its supply chain labor transparency, which is further shaped by the diversity and freshness of the board.

115-1064 How Does Flexibility Affect Environmental Performance? Empirical Evidence from the Power Generation Industry

David Drake, Assistant Professor, University of Colorado Boulder, United States

Suresh Muthulingam, Associate Professor, Penn State University University Park, United States

Several CO2 abatement paths alter the flexibility burden placed on the conventional power generation grid. However, the environmental consequences of this flexibility are unexplored. In this study, we examine the environmental impact of flexibility in US power generation, distinguishing between the environmental effects of possessing flexibility and exercising flexibility.

Invited Session

41	Monday, 09:45 AM - 11:15 AM, Celebration 8	Track: Sustainable Operations Management
	Invited Session: Empirical studies in sustainable operations	
	Chair(s): Wayne Fu	

115-0202 Fueling or dousing the flames - Environmental Accidents and Selective Disclosure

Rick Hardcopf, Assistant Professor, Utah State University, United States

Suvrat Dhanorkar, Associate Professor, Penn State University State College, United States

Sarv Devaraj, Professor, University of Notre Dame, United States

Environmental accidents not only damage the natural environment but harm offending firms. Fines and clean-up costs can be expensive and reputational losses cause market devaluation. While firms have limited control over direct costs, reputational losses may be minimized by adjusting stakeholder messaging. This study investigates the messaging adjustments firms make.

115-0254 Good neighbor or good environmentalist? Characteristics of firm-level responses to water stress

Dustin Cole, Assistant Professor, Auburn University, United States

Sriram Narayanan, Professor, Michigan State University, United States

Elizabeth Connors, Assistant Professor, Michigan State University, United States

We examine the characteristics of firms which have and have not responded to localized water stress by reducing their toxic water emissions. We find firms with a strong track of environmental sustainability have not generally responded to local water stress, while those with a track record of community engagement have.

115-0611 Shareholder Value Effects of Electric Vehicle Announcements

Brian Jacobs, Professor, Pepperdine University, United States

Vinod Singhal, Professor, Georgia Institute of Technology, United States

We study announcements of plans to establish or expand electric vehicle (EV) production in the global automotive industry. We estimate the stock market reaction to both traditional automakers and pure-play EV-makers, as well as EV battery makers, to ascertain whether the market reacts differently to these segments.

115-1322 Customer base environmental disclosure and supplier greenhouse gas emissions

Sining Song, Assistant Professor, University of Tennessee Knoxville, United States

Jie Lian, Student, University of South Carolina, United States

Keith Skowronski, Assistant Professor, University of South Carolina, United States

Tingting Yan, Associate Professor, Wayne State University, United States

Customers signal commitment to address the challenges of climate change. The signal is credible and effective when it is behind real changes in the carbon performance of the supply chain. This research investigates whether customer base environmental disclosure affects suppliers' greenhouse gas emissions.

Contributed Session

42	Monday, 09:45 AM - 11:15 AM, Celebration 9	Track: Supply Chain Management
	Contributed Session: Pricing and Contract	
	Chair(s): Joyaditya Laik	

115-0720 Impact of a Wholesale Price Contract with penalty on Delivery Failure in a Crowdfunding Campaign.

Joyaditya Laik, Assistant Professor, Bucknell University, United States

Nabita Penmetsa, Assistant Professor, University of Utah, United States

Monday, 09:45 AM - 11:15 AM

We study the risk of delivery failure in a "successful" crowdfunding campaign through a wholesale price contract in which a supplier offers a wholesale price and a premium to the entrepreneur to not produce. We find a more informative crowdfunding signal can increase a backer's risk of delivery failure.

115-0814 Forward Contracts, Inventory, and Supply Chain Efficiency

Ayush Gupta, Student, Indian Institute of Management Ahmedabad, India
Benny Mantin, Professor, University of Luxembourg, Luxembourg
Sachin Jayaswal, Professor, Indian Institute of Management Ahmedabad, India

The study finds that forward contracting eliminates the buyer's strategic inventory, relieves double marginalization, and benefits all the players. However, though the buyer never carries inventory if the seller offers a forward contract, the buyer's inventory option almost always hampers the benefit of forward contracting and hurts all the players.

115-1712 Cost-sharing and revenue-sharing contracts for quality improvement in a supply chain with product recall

Amirhossein Jafarzadeh Ghazi, Student, University of Ontario Institute of Technology, Canada
Salma Karray, Professor, Ontario Tech University, Canada
Nader Azad, Associate Professor, Ontario Tech University, Canada

Quality-related product recalls can be arduous incidents for the entire supply chain. Considering the rising cost of quality, the manufacturer and the retailer may adopt collaborative quality improvement strategies to enhance the supply chain performance. We investigate whether cost- or revenue-sharing contracts can benefit a supply chain with product recall.

115-2062 Dynamic pricing and inspection policies for technology adoption

Benny Mantin, Professor, University of Luxembourg, Luxembourg
Weichun Chen, Assistant Professor, Hainan University, China

We study mandated adoption of technologies such that, after some grace period, governments inspect users for compliance. The inspection policy, which may follow either a compliance-based or a violation-based scheme, carries implications on inter-temporal adoption rates, pricing employed by the technology supplier, and interactions between the agents.

Invited Session

43	Monday, 09:45 AM - 11:15 AM, Celebration 10	Track: Supply Chain Management
	Invited Session: Emerging Topics in Supply Chains	
	Chair(s): Xiajun Pan Zhechao Yang	

115-1181 Retail Category Management with Slotting Fees

Yasin Alan, Associate Professor, Vanderbilt University, United States
Mumin Kurtulus, Associate Professor, Vanderbilt University, United States
Alper Nakkas, Assistant Professor, University of Texas Arlington, United States

Slotting fees are lump-sum payments manufacturers make to retailers to secure slots for their products in retailers' assortments. We study the role of slotting fees in a retailer's category management decisions and strategic interactions with national brand manufacturers.

115-1346 Markdown Pricing with Taste Projection of Strategic Consumers

Shengshuo Xu, Student, Ustc, China
Quan Zheng, Associate Professor, University of Science and Technology of China, China

This paper explores the role of taste projection (TP) in markdown pricing with limited capacity. We show that markdown pricing arises although it is never optimal in the rational benchmark. Further, the firm's profit is non-monotonic in capacity and increasing in the degree of TP.

115-1354 Probabilistic Selling for Vertically Differentiated Products in a Supply Chain

Zhechao Yang, Student, University of Florida, United States
Xiajun Pan, Associate Professor, University of Florida, United States

We study probabilistic selling for vertically differentiated products in a supply chain. The supplier or retailer can create a probabilistic product (PP). Capturing consumers' gambling behavior when purchasing the PP, we discover that both the supplier and retailer may prefer the supplier to create the PP.

115-1505 Counterfeiting and Competition on an Online Platform

Ganquan Huang, Student, University of Science and Technology of China, China
Tingliang Huang, Professor, University of Tennessee, Knoxville, United States
Yugang Yu, Professor, University of Science and Technology of China, China

Unethical retailers may sell counterfeit products on a platform. We analyze the incentives for the platform to implement blockchain technology to combat counterfeiting. Price competition among ethical and unethical retailers is considered.

Invited Session

44	Monday, 09:45 AM - 11:15 AM, Celebration 11	Track: Social Media and Web 2.0
	Invited Session: Social Media and Online Markets	
	Chair(s): Jingchuan Pu	

Monday, 09:45 AM - 11:15 AM

115-0142 Impact of Owner's Business Page Claiming on Customer Evaluation

Jong Youl Lee, Student, University of Rochester, United States
Mikhail Lysyakov, Assistant Professor, University of Rochester, United States
Huaxia Rui, Professor, University of Rochester, United States

More and more customers expect to communicate with local businesses on digital platforms. Platforms associated with local businesses have encouraged business owners to claim their business pages to connect to customers. We examine the impact of owners' business page claiming on customer evaluation using a staggered difference-in-differences design.

115-1094 Understanding Removal Effects in Multi-Touch Attribution

Jun Tao, Data Scientist, Adobe Inc., United States
Qian Chen, Assistant Professor, Penn State University University Park, United States
Lingzhou Xue, Associate Professor, Penn State University University Park, United States
Jim Snyder, -, Adobe Inc., United States
Amirhossein Meisami, -, Adobe Inc., United States

We develop a novel graph-based model for attribution in the multi-channel setting using customer-level path-to-purchase data. Based on the learned graph describing the full relational structure of touches and conversion, we further propose graphical attribution methods that assign proper conversion credit to each type of touchpoint and the corresponding channel

115-1166 Responsible IS by Design: A Psychology-Informed Social Connection Recommender System for Mental Health

SIYUAN LIU, Assistant Professor, Penn State University, United States

we propose a Psychology-informed social connection Recommendation framework (PRec) to promote mental health. Offline experiment results on real-world data sets from seven social platforms in both US and China demonstrate a significant performance gain (in recommendation quality and user satisfaction) of METIS over a variety of state-of-the-art baselines.

115-1821 Time Series Demand Forecasting with Amazon and Twitter Data

Alex Rudniy, Associate Professor, Drew University, United States

This work describes promising results of the consumer goods demand forecasting. Historical sales data for products sold on Amazon are paired with the corpus of relevant Tweets appeared on Twitter. Data processing and feature engineering are applied to construct a dataset. Multivariate time series analysis is used for forecasting demand.

115-2022 Tie Strength, Network Closure, and Crowdfunding Performance

Ta-Wei (Daniel) Kao, Assistant Professor, University of Michigan - Dearborn, United States
Li Zhang, Student, Michigan State University, United States
Benjamin Shao, Professor, Arizona State University, United States
Thomas Choi, Professor, Arizona State University Tempe, United States

Treating internal tie strength as a multidimensional construct involving relationship intensity and preference similarity between a focal fundraiser and peers, our study explores how tie strength interacts with network closure (i.e., interconnections among peer fundraisers) to determine crowdfunding performance, thereby offering insightful implications for fundraisers to nurture successful projects.

Invited Session

45	Monday, 09:45 AM - 11:15 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Empirical Research for Humanitarian Operations	
	Chair(s): Eunae Yoo	

115-0392 Tweet in Unison? Examining Content Coordination and Social Media Engagement during Disasters

Changseung (Chang) Yoo, Assistant Professor, McGill University, Canada
Eunae Yoo, Assistant Professor, Indiana University Bloomington, United States
Lu (Lucy) Yan, Associate Professor, Indiana University Bloomington, United States
Alfonso Pedraza, Professor, Indiana University, United States

Disaster relief organizations (DROs) often post social media content via multiple accounts on the same platform. Accounts represent distinct entities (e.g., national headquarters, local branch). Using Twitter data collected in partnership with the Canadian Red Cross, we examine how DROs should coordinate content creation across their accounts to increase engagement.

115-1157 Humanitarian organizations in the digital sphere: How type of funding predicts inter-organizational cross-references on Twitter

Lea Ruesch, Assistant Professor, IE BUSINESS SCHOOL, Spain
Maria Besiou, Professor, Kuehne Logistics University, Germany
Niels Van Quaquebeke, Professor, Kuehne Logistics University, Germany

Given social media's utility in information diffusion among stakeholders in humanitarian operations, our study investigates the extent to which humanitarian organizations (HOs) cross-reference their information on Twitter. Empirically analyzing dyads among 84 HOs, we find institutionally and privately funded HOs to more actively cross-reference information from the same funding group.

115-1273 Resilience and Humanitarian Supply Chain

Iana Shaheen, Assistant Professor, University of Arkansas - Fayetteville, United States
Arash Azadegan, Professor, Rutgers University, United States

Monday, 09:45 AM - 11:15 AM

Humanitarian supply chains face diverse and unique impediments that in preparing for and responding to significant disasters. While much has been written about commercial resilience strategies, few consider resiliency within a humanitarian network. This research explains how different types of supply chain resilience affect efficiency, effectiveness, and equity.

115-1569 Budget allocation in the nonprofit sector: an empirical investigation

Iman Parsa, Post Doc/Researcher, INSEAD, France

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

Nonprofits are commonly evaluated by financial metrics that highly depend on their budget allocation policies. Using financial data of a large set of nonprofits, we empirically investigate the short- and long-term effects of budget allocation policies on nonprofits' income and social impact.

Contributed Session

46	Monday, 09:45 AM - 11:15 AM, Celebration 13	Track: Teaching/Pedagogy in POM
	Contributed Session: Tutorial: Teaching Operations Management and Analytics (I)	
	Chair(s): Ardavan Asef-Vaziri	

115-0048 New Disaster Recovery Multiplayer Online Game

F. Robert Jacobs, Emeritus Professor, Indiana University Bloomington, United States

Professor Jacobs will discuss a new multiplayer exercise designed to provide practice in managing an inventory of medicine during a large-scale public health emergency. The players act as the inventory manager at a facility that receives, stores, stages and allocates inventory to multiple points where medical product is dispensed.

115-1695 Performing Basic-to-Advanced Statistical Analyses in a "No Code" Interactive Environment

Kevin Potcner, Statistical Scientist, JMP Statistical Discovery, United States

Ross Metusalem, Statistical Scientist, JMP Statistical Discovery, United States

Analyzing data has moved away from "choose a technique to address a specific hypothesis" to "explore data in myriad ways to extract insights". This exploratory approach can be cumbersome for students in a coding environment. A statistical scientist from JMP will demonstrate an interactive "no code" approach to data exploration.

Invited Session

47	Monday, 09:45 AM - 11:15 AM, Celebration 14	Track: Service Operations
	Invited Session: Behavioral Operations Management in Service Industry	
	Chair(s): Meng Li Na Zhang	

115-0430 Simultaneous versus Sequential Bargaining in Multiple Sourcing: Theory and Experiment

Haokun Du, Student, The University of Texas at Dallas, United States

Bin Hu, Associate Professor, Naveen Jindal School of Management, United States

Elena Katok, Professor, University of Texas Dallas, United States

Multiple sourcing (MP) can reduce sourcing cost. We consider unstructured bargaining and two sourcing mechanisms, simultaneous and sequential MP. Theory predicts a de facto sole sourcing in sequential MP and equal quantity division in simultaneous MP. We test our theory in controlled lab experiments and discuss their implications.

115-0923 Sharing Economy Platforms with Reference-Dependent Gig Workers

Na Zhang, Student, University of Florida, United States

Anand Paul, Professor, University of Florida, United States

Liangfei Qiu, Associate Professor, University of Florida, United States

The sharing economy and gig workers have become a major feature in modern economies. The empirical literature shows that gig workers have reference-dependent, loss-averse preferences toward wage. To fill the gap between prior theoretical work, we initiate a theoretical study of gig worker's reference-dependent, loss-averse preferences in sharing economy platforms.

115-1329 Sell Now or Later? Regret with Price Volatility

Jingjing Weng, Student, Temple University, United States

Yiwei Chen, Assistant Professor, Temple University, United States

Meng Li, Associate Professor, University of Houston, United States

It is paramount for a firm to determine when to sell and how many quantities to sell. In this paper, we employ dynamic programming to investigate a regret minimization firm's problem of allocating a fixed capacity in a dynamic multi-period setting with price volatility.

Invited Session

48	Monday, 09:45 AM - 11:15 AM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Platform Strategy and Mechanism Design	
	Chair(s): Yi Gao	

115-0733 A Truthful and Efficient Mechanism for Multi-slot Ad Scheduling with Budget Constraints

Monday, 09:45 AM - 11:15 AM

Zihong Huang, Student, Carlson School of Management, United States

De Liu, Associate Professor, University of Minnesota, United States

Budget constraints are a central feature of real-world keyword auctions. We propose an efficient and truthful mechanism for allocating multiple heterogeneous slots among advertisers with private value and budgets. We present the algorithms for our scheduling approach and discuss broad implications of our results for mechanism, episode level ad scheduling.

115-0924 The Fairy's Magic for Pinocchio's Nose: The Return Policy for Review Manipulation

Xiangjing (Olivia) Chen, Student, Arizona State University, United States

Yi-Jen (Ian) Ho, Assistant Professor, Penn State University University Park, United States

Shengjun Mao, Assistant Professor, The University of Hong Kong, Hong Kong, China

Review manipulation (RM) is pervasive on online platforms. We craft a game-theoretic model to explore platform incentives in inhibiting RM via return policies. We identify a return-manipulation paradox that a platform is more willing to choose the policy that encourages RM. We propose an autonomous scheme to resolve the paradox.

115-1601 The Efficacy of Need-based Attentional Interventions in Educational Crowdfunding

Amin Sabzehzar, Student, Arizona State University, United States

Gordon Burtch, Associate Professor, Boston University, United States

Kevin Hong, Professor, University of Miami, United States

Raghu Santanam, Professor, Arizona State University Tempe, United States

We explore the consequences of attentional interventions from the platform to support disadvantaged student groups. Leveraging data from DonorsChoose.org, we first report evidence that fundraisers benefiting lower-income and minority students receive systematically lesser funding. Subsequently, we examine the causal effect of 'equity-focus' project label.

Invited Session

49	Monday, 09:45 AM - 11:15 AM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Topics in Autonomous Vehicles, Crowdfunding, and Employee Wellbeing	
	Chair(s): Nagarajan Sethuraman	

115-0493 The Operational and Organizational Impacts of Burnout and Joy in Healthcare

Alison Murphy, Student, University of Minnesota, United States

Rachna Shah, Associate Professor, University of Minnesota, United States

The negative impacts of burnout are well known, and the healthcare industry has begun to focus on increasing joy rather than just minimizing burnout. We develop a measure of joy from work, test it with a field study, and show the impact on operational and organizational outcomes.

115-0835 Designing Reward Structure for Crowdfunding Campaigns

Param Pal Singh Chhabra, Assistant Professor, University of Alberta, Canada

Manpreet Hora, Associate Professor, Georgia Institute of Technology, United States

Karthik Ramachandran, Professor, Georgia Institute of Technology, United States

Rewards are crucial for the success of a campaign in reward-based crowdfunding. In this study, we empirically investigate the association between reward structure design and the campaign's performance, and we make recommendations for creators.

115-1251 Models of Autonomous Vehicles in Operations Management

Amin Abbasi Pooya, Student, University of Kansas, United States

Nagarajan Sethuraman, Assistant Professor, University of Kansas, United States

Suman Mallik, Associate Professor, University of Kansas, United States

We present research on modeling operations management issues in autonomous vehicle market. Monopoly environment was modeled using optimization, while market dynamics in competition were analyzed using game theoretical models. Using these models enables us to characterize the equilibrium, analyze its properties, and provide useful results and insights.

Invited Session

50	Monday, 09:45 AM - 11:15 AM, Coral Spring 2	Track: Emerging Topics in Operations Management
	Invited Session: Innovative Operations for Fairness, Transparency and Efficiency	
	Chair(s): Hailong Cui Jingxuan Geng	

115-0093 Human in the Loop Automation: Ride-Hailing With Remote (Tele-) Drivers

Saif Benjaafar, Professor, University of Minnesota, United States

Zicheng Wang, Post Doc/Researcher, University of Minnesota, United States

Xiaotang Yang, Student, University of Minnesota, United States

We examine the impact of tele-driving on the efficiency of ride-hailing (and other on-demand transportation-enabled services). Among our findings, we show that having fewer (tele) drivers than vehicles can surprisingly improve performance (mitigating the wild goose chase phenomenon) or stabilize an otherwise unstable system.

115-0097 Budget disclosure in crowdfunding: information asymmetry and cost transparency

Guangzhi Shang, Associate Professor, Florida State University, United States

Monday, 09:45 AM - 11:15 AM

Wayne Fu, Assistant Professor, University of Michigan Dearborn, United States

Xun Bruce Tong, Assistant Professor, University of Groningen, Netherlands

We study how the drastic transparency of disclosing a creator's cost structure in developing a crowdfunding project affects the funding performance.

115-0927 An Empirical Analysis of Delay Sensitivity of Customers and Driver Routing Behavior in Grocery Delivery

Hailong Cui, Assistant Professor, University of Minnesota, United States

Na Li, Student, Beijing Institute of Technology, China

Guo Li, Professor, Beijing Institute of Technology, China

Guangwen Kong, Assistant Professor, Temple University, United States

We empirically study the impact of delay sensitivity of customers who order grocery via app and the impact of delivery drivers' routing behaviors on delivery performance. We collect unique panel data sets and use econometric methods to research the implications the online grocer's operational drivers.

115-1666 The Impact of the Opportunity Zone Program on Residential Real Estate

Ron Bekkerman, Manager, Cherre, United States

Maxime Cohen, Professor, McGill University, Canada

Xiaoyan Liu, Assistant Professor, Santa Clara University, United States

John Maiden, Manager, Cherre, United States

Dmitry Mitrofanov, Assistant Professor, Boston College, United States

Opportunity zones (OZs) are designated census tracts in which real estate investments can gain tax benefits. We investigate and optimize the OZ selection process, and examine the impact of OZs by exploiting two datasets. Our paper underscores the importance of incorporating fairness in OZ designation to achieve a desirable outcome.

Invited Session

51	Monday, 09:45 AM - 11:15 AM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Supply Chain Risk and Disruptions Management	
	Chair(s): Mili Mehrotra	

115-0760 Operational Disruptions, Firm Risk, and Control Systems

William Schmidt, Assistant Professor, Cornell University, United States

Ananth Raman, Professor, Harvard University, United States

We examine whether implementing and credibly attesting to having effective internal control systems will meaningfully influence the impact of operational disruptions on the firm's risk and market valuation.

115-0980 The Role of Real-Time Event Monitoring in Dynamic Response to Disruptions

Shailesh Divey, Post Doc/Researcher, University of Alabama Tuscaloosa, United States

Mert Hakan Hekimoglu, Assistant Professor, Rensselaer Polytechnic Institute, United States

T. Ravichandran, Professor, Rensselaer Polytechnic Institute, United States

This paper investigates a risk-averse firm's investment strategy in real-time event-monitoring technologies coupled with dynamic disruption response decisions. We model a two-stage stochastic program to study this problem where the risk aversion is modeled in the form of a Value-at-Risk (VaR) constraint.

115-1296 Configuring the future supply chain: A path to flexibility and resilience

Yogendra Singh, Student, University of Exeter, United Kingdom

Okechukwu Okorie, Lecturer, University of Exeter, United Kingdom

Ramesh Subramoniam, Associate Professor, University of Texas Dallas, United States

David Widdifield, Associate Professor, University of Texas at Dallas, United States

Harpreet Singh, Assistant Professor, University of Texas at Dallas, United States

Using a survey and case study based methodology, we find that digitization reduces the impact of supply chain risks; particularly supply, demand, and information risks. This study provides a reference for managerial decision-making to identify and prioritize digital technologies, their applications, factors involved in their implementation, and future business models.

115-1365 Supply Chain Resilience in the Face of Production Disruptions

Junfei Lei, Student, University of Washington, United States

Shi Chen, Associate Professor, Michael G. Foster School of Business, United States

Kamran Moynzadeh, Professor, University of Washington, United States

We study a supply chain with one retailer and two suppliers. The two suppliers locate at the two end-points of the Hotelling line, and the pandemic can spread along the line and, thus, induces supply disruption. This paper investigates how safety stock, multi-sourcing, and coordination can improve supply chain Resilience.

Monday, 09:45 AM - 11:15 AM

Invited Session

52	Monday, 09:45 AM - 11:15 AM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Panel: DEI in Operations Management	
	Chair(s): Kaitlin Wowak Veronica Villena	

115-2114 Panel: DEI in Operations Management

Kaitlin Wowak, Associate Professor, University of Notre Dame, United States

Veronica Villena, Associate Professor, Arizona State University, United States

This session is centered on Diversity, Equity, and Inclusion (DEI). The session will begin with a panel consisting of leaders who have forwarding DEI initiatives within OM. They will share their experiences and high-level insights on DEI trends and opportunities followed by small group discussions.

Invited Session

54	Monday, 09:45 AM - 11:15 AM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Operational Excellence in addressing social challenges	
	Chair(s): Yingru Han	

115-0119 Improving Drinking Water Access and Equity in Rural Sub-Saharan Africa

Chengcheng Zhai, Student, Kelley School of Business, United States

Kurt Bretthauer, Professor, Indiana University, United States

Jorge Mejia, Assistant Professor, Indiana University, United States

Alfonso Pedraza, Professor, Indiana University, United States

Millions of people lack access to clean drinking water in Sub-Saharan Africa. Building new water projects (e.g., handpumps) helps non-governmental organizations improve access to water in this region. Following our field research in Tigray, Ethiopia, we use optimization to study where to build new water projects in Sub-Saharan Africa.

115-0650 Enhance Fundraising Productivity through Strategic Staffing and Revenue Diversification Strategies

Yingru Han, Student, University of South Carolina, United States

Luv Sharma, Associate Professor, University of South Carolina, United States

Pelin Pekgun, Associate Professor, University of South Carolina, United States

In this study, we intend to study how various revenue diversification strategies and staffing decisions affect fundraising productivity in non-profit organizations. We use panel data from 116 food banks affiliated with Feeding America.

115-1540 The Opioid Crisis Explained Through the Unanticipated Prescription Opioid Policy Outcomes

David Dreyfus, Assistant Professor, Rutgers Business School, United States

Eunseok Kim, Student, Rutgers Business School, United States

Alok Baveja, Professor, Rutgers University, United States

The opioid crisis continues unabated. This study exposes that restricting the supply of prescription opioids increases adverse outcomes, such as opioid-related hospitalizations and overdose deaths. This unexpected result suggests the need for different policy interventions to change the current trajectory of opioid abuse. New processes, strategies, and tactics are discussed.

115-1861 Mission vs. Profit: The Interplay Between Social Service Agencies and Private Service Providers

Gulten Busra Karkili, Student, University of Massachusetts Amherst, United States

Senay Solak, Professor, University of Massachusetts Amherst, United States

Subsidy welfare programs typically involve interactions between mission-oriented service agencies and profit-oriented providers. In this paper, we identify funding-based mechanisms for service agencies to incentivize program participation and capacity allocation by private service providers. A provider's decision process is impacted by demand uncertainty, risk factors, and participation decisions of competitors.

Invited Session

55	Monday, 09:45 AM - 11:15 AM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Frontiers of Applied Game Theory	
	Chair(s): Shubhanshu Singh	

115-0290 Forgetful Consumers and Consumption Tracking

Ying Bao, Assistant Professor, University of Illinois at Urbana Champaign, United States

Peter Landry, Associate Professor, University of Toronto, Canada

Mengze Shi, Professor, Hong Kong University of Science and Technology, Hong Kong, China

We study the market consequences of advances in consumption tracking technologies using a two-period consumption model. We find the availability of consumption tracking often helps consumers at the expense of the firm. Sometimes, it might compel a firm to impose a penalty fee that would not otherwise be viable.

115-0563 When Does a Brand-Influencer Matching AI Backfire?

Monday, 09:45 AM - 11:15 AM

Jessie Liu, Assistant Professor, Johns Hopkins University, United States

Yi Liu, Assistant Professor, University of Wisconsin-Madison, United States

We consider a social media platform that offers a matching service to match marketers with influencers through Artificial Intelligence (AI) technology. We find that, even if the implementation cost is negligible, it is not always in a platform's best interest to adopt such AI technology or to perfect its AI.

115-1291 Educational Inequality and Reservation Policy in Developing Markets

Shubhanshu Singh, Associate Professor, Johns Hopkins University, United States

This paper investigates educational inequality that arises from low-income students' lack of monetary resources that higher-income students invest in education. We study implications of a reservation policy that aims to reduce inequality by reserving some college seats for students of the disadvantaged group.

Invited Session

56	Monday, 09:45 AM - 11:15 AM, Barrel Spring 2	Track: POM-Marketing Interface
	Invited Session: The Impact of Business Strategies and Government Restrictions	
	Chair(s): Junghee Lee	

115-0204 Does Greater Visibility Benefit Minority Businesses? Evidence from an Online Restaurant Review Platform

Yoonseock Son, Assistant Professor, University of Notre Dame, United States

Kaitlin Wowak, Associate Professor, University of Notre Dame, United States

Corey Angst, Associate Professor, University of Notre Dame, United States

We investigate whether and how the number of reviews and reviewer ratings changed for restaurants in New York City after identifying themselves as black-owned. We find that the number of reviews increases, but the average rating decreases. We investigate how various contextual factors and reviewer characteristics impact this relationship.

115-0570 The Impact of Mobile App Upgrades across App Versions

Seoungwoo Lee, Assistant Professor, A.B. Freeman School of Business, United States

Jie Zhang, Professor, University of Maryland - College Park, United States

Michel Wedel, Professor, University of Maryland - College Park, United States

Mobile app developers frequently release upgrades to improve the appeal of an app and user experience and engagement. This study investigates the impact of app upgrades on new users' demand for the app and in-app revenues from existing users, across the free and paid app versions.

115-0860 The Impact of Loosening Firearm Usage Restrictions on Firearm Sales and Public Health-Related Outcomes

Jessica Kim, Assistant Professor, Bocconi University, Italy

Empirical evidence on the impact of firearm usage restrictions on firearm sales is scarce but needed to inform policy. 17 states and DC have loosened firearm usage restrictions between 2010 and 2017. This research estimates the average policy effects on firearm sales and multiple public health-related outcomes.

115-0966 Omnichannel Fulfillment in Grocery Retail

Chloe Glaeser, Assistant Professor, Kenan-Flagler Business School, United States

Ken Moon, Assistant Professor, The Wharton School, United States

Xuanming Su, Professor, University of Pennsylvania, United States

We partner with an online grocery retailer to examine how the retailer can leverage data to customize locally available fulfillment options while scaling its operations. We find the causal effect of delivery introduction and build and estimate a structural model to estimate the revenue increase from additionally offering delivery.

Invited Session

57	Monday, 09:45 AM - 11:15 AM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Online Platform and E-Business	
	Chair(s): Lina Wang	

115-0243 Retailers and Delivery Platforms: Complements or Substitutes?

Kevin Park, Assistant Professor, University of Dayton, South Korea

Xiaodan Pan, Assistant Professor, Concordia University, Canada

Martin Dresner, Professor, University of Maryland, United States

We analyze how delivery platform partnerships impact retailer and delivery platform sales. We find that delivery platform partnerships have a positive effect on both retailer and delivery platform sales. However, these positive impacts depend on whether the two partners are vertically integrated.

115-0958 The Value of Delivery Platforms on Cross-channel Grocery Retailing

Lina Wang, Assistant Professor, The Pennsylvania State University, United States

Elliot Rabinovich, Professor, Arizona State University Tempe, United States

This study empirically investigates how the adoption of delivery platforms as an additional channel affects brick-and-mortar retailers' store performance based on transaction data from regional retail chains. More importantly, we evaluate how this effect varies depending on local competition and households' preferences.

Monday, 09:45 AM - 11:15 AM

115-0977 Implementing Algorithmic Recommendations in Retail Operations

Javier Amaya Silva, Student, University of Oxford, United Kingdom

Matthias Holweg, Professor, Oxford University, United Kingdom

In this paper, we examine whether algorithmic technologies can realise improvements when the efficacy of an algorithm is dependent on the level of adherence to its recommendations. We study this problem in the context of inventory record inaccuracy, seeking to minimise mismatches between physical and recorded stock levels.

115-1832 Integrating Inventory and Fulfillment Capabilities: The Effects of Omnichannel Distribution

Alan Pritchard, Assistant Professor, Texas Tech University, United States

Xinyi (Kate) Ren, Assistant Professor, Ohio State University, United States

Rafay Ishfaq, Professor, Auburn University, United States

Philip Evers, Associate Professor, University of Maryland, United States

This study examines an omnichannel fulfillment strategy involving fulfilling online orders from brick-and-mortar stores and online fulfillment centers. Using simulation modeling based on a proprietary dataset collected from a north American retailer, we investigate how store managers' decisions to accept or reject an online order affect the overall operational efficiency.

Invited Session

58

Monday, 09:45 AM - 11:15 AM, Regency Ballroom Q

Track: Revenue Management and Pricing

Invited Session: Recent Advances on Revenue Management with Choice Models

Chair(s): Ruxian Wang

115-0317 Optimizing Risk-Balancing Return under Discrete Choice Models

Hongmin Li, Professor, Arizona State University Tempe, United States

Scott Webster, Professor, Arizona State University Tempe, United States

We examine a firm's pricing decision when managing a broad product line with the goal of optimally balancing the expected return on product investment with the revenue or profit risk associated with uncertain customer choices. We characterize the effects of risk considerations on optimal price decisions.

115-1314 Joint Product Design and Dynamic Assortment Optimization: Integrating Strategic and Tactical Revenue Management

Mengxin Wang, Student, University of California Berkeley, United States

Paat Rusmevichientong, Professor, University of Southern California, United States

Heng Zhang, Assistant Professor, Arizona State University, United States

Max Shen, Professor, University of California Berkeley, United States

We examine a setting where the strategic decision is to choose product designs and the tactical decision involves the dynamic assortment optimization. Applications of our formulation abound. To determine the product design, we reformulate the choice-based deterministic linear program, solve its continuous relaxation, and round the resulting solution.

115-1787 Assortment Design with Fairness Constraint

wentao Lu, Post Doc/Researcher, Carey Business School, United States

Ozge Sahin, Associate Professor, Johns Hopkins University, United States

Ruxian Wang, Professor, Johns Hopkins University, United States

We consider the assortment optimization problem for the platform when there is a fairness constraint. We show that the optimal solution has nice structure and is easy to implement.

Invited Session

60

Monday, 09:45 AM - 11:15 AM, Regency Ballroom P

Track: Disruptive Technologies and Operations Management

Invited Session: Emerging Technology in Information Systems and Operations Management

Chair(s): Dandan Qiao

115-1962 Optimal Pricing of Trial and Long-term Digital content subscriptions: A Dynamic Structural Model

Ding Li, Assistant Professor, Nanjing University, China

Khim Yong Goh, Associate Professor, National University of Singapore, Singapore

In digital content subscription businesses, firms often provide consumers with freemium (i.e., free and premium) subscription plans that vary by short- and long-term durations (e.g., weekly, monthly, yearly). We develop a structural model to estimate the optimal discount to the per-period price of long-term plans and the trial subscriptions.

115-1964 Does Telehealth Reduce Rural-Urban Care-Access Disparities? Evidence from COVID-19 Telehealth Expansion

Shujing Sun, Assistant Professor, University of Texas at Dallas, United States

Guihua Wang, Assistant Professor, University of Texas Dallas, United States

We investigate the effect of telehealth expansion policy on rural-urban healthcare-access disparities. Leveraging a difference-in-differences design, we find an enlarged disparity in rural-urban healthcare access (i.e., total patient visits) due to telehealth expansion. We also analyze from the supply and demand sides to uncover the mechanisms driving the disparity gap.

115-2009 Technological Threat in Blockchain-Based Platforms

Monday, 09:45 AM - 11:15 AM

Ping Fan Ke, Assistant Professor, Singapore Management University, Singapore

Blockchain-based platforms are getting popular in business operations. Applications like supply chain management, resource allocation, and auctions are implemented by businesses using Blockchain. However, research in the technological threat in this area is limited. In this presentation, I will discuss the threats in blockchain-based platform like block stuffing.

Contributed Session

61	Monday, 09:45 AM - 11:15 AM, Silver Spring 1	Track: Aviation and Transportation Operations
	Contributed Session: Transportation Logistics and Safety	
	Chair(s): Paulo Gomes	

115-0840 Analysis of Two-stage Screening Procedure at Airport Security Checkpoint

Young Chun, Professor, E. J. Ourso College of Business, United States

Under the two-stage screening procedure in manufacturing industry, all units are inspected at the first stage. Any units that fail at the first stage are subject to complete inspection at the second stage. We apply the same screening procedure to airport security check points and analyze its effectiveness.

115-1076 A Proximal Policy Optimisation Approach to solve a large scale ambulance dispatch problem

Yimo Yan, Student, The University of Hong Kong, Hong Kong, China

Linhui Fu, Student, Duke University, United States

Yong-Hong Kuo, Assistant Professor, The University of Hong Kong, Hong Kong, China

We tailored a heterogeneous self-attention approximator, trained with PPO, to instantly match the optimum ambulances with patients, and meanwhile balance the number of ambulances in different dispatch centres as new requests emerge. Our results show that the proposed method can well outperform classic methods.

115-1352 Impact of Indirect Costs on Routing Decisions in Hinterland Intermodal Networks

Elham Jelodari Mamaghani, Assistant Professor, Catholic University of Lyon (ESDES), France

Yann Bouchery, Associate Professor, Kedge Business School, France

Hinterland movements of maritime containers are often subject to demurrage, detention and storage fees beyond transportation costs. We aim at assessing the impact of these indirect costs on the shippers' routing decisions. These costs, generally ignored in the existing literature, have some specific structures that require to extend existing formulations.

Contributed Session

62	Monday, 09:45 AM - 11:15 AM, Silver Spring 2	Track: Inventory and Logistics Management
	Contributed Session: Inventory Policy Decisions - 2	
	Chair(s): Dean Chatfield	

115-0508 Asymptotic Optimality of Semi-Open-Loop Policies in Markov Decision Processes with Large Lead Times

Xingyu Bai, Student, University of Illinois Urbana-Champaign, United States

Xin Chen, Professor, University of Illinois at Urbana Champaign, United States

Menglong Li, Assistant Professor, ?, China

Alexander Stolyar, Professor, University of Illinois Urbana-Champaign, United States

We consider a Markov decision process (MDP) with two controls: one control taking effect immediately and the other control whose effect is delayed by a positive lead time. The purpose of this paper is to establish asymptotic optimality of semi-open-loop policies as the lead time increases.

115-0824 Robust spare parts inventory management.

Zhao Kang, Student, Eindhoven University of Technology, Netherlands

Ahmadreza Marandi, Assistant Professor, Eindhoven University of Technology, Netherlands

Rob Basten, Associate Professor, Eindhoven University of Technology, Netherlands

We present a robust optimization approach in spare parts inventory with demand uncertainties. We develop a more time-efficient algorithm capable of finding solutions in case of a large number of items in the model. We conduct extensive experiments to compare the performance of our model with the conventional one.

115-1104 Distributionally Robust Shipment Consolidation

Eojin Han, Assistant Professor, Southern Methodist University, United States

Sila Cetinkaya, Professor, Southern Methodist University, United States

We study the problem of consolidating shipments to minimize worst-case transportation cost under distributional ambiguity. We show that under mean and mean-absolute deviation constraints, distributionally robust optimal consolidation cycle can be efficiently computed with analytical solutions in special cases. Numerical results demonstrate promising performance of the proposed approach.

115-1459 Learning to Order for Inventory Systems with Lost Sales and Uncertain Supplies

Boxiao (Beryl) Chen, Associate Professor, University of Illinois at Chicago, United States

Jiashuo Jiang, Assistant Professor, Hong Kong University of Science and Technology, China

Jiawei Zhang, Professor, New York University, United States

Zhengyuan Zhou, Assistant Professor, New York University, United States

Monday, 09:45 AM - 11:15 AM

We consider a stochastic lost-sales inventory control system with a lead time L over a planning horizon T . Supply is uncertain, and is a random function of the order quantity. We develop a new learning policy achieving a $O(L + \sqrt{T})$ regret bound, improving existing results in the literature.

Invited Session

63	Monday, 09:45 AM - 11:15 AM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Emerging Trends in Innovation	
	Chair(s): Gulru Ozkan-Seely	

115-1466 I think we should see other people: Exploring biotech-pharma partnership terminations following successful drug launches

Pierre Gautreau, Student, York University, Canada

Moren Levesque, Professor, York University, Canada

Annapoornima Subramanian, Associate Professor, National University of Singapore, Singapore

Vareska Van De Vrande, Professor, Erasmus University Rotterdam, Netherlands

Using a comprehensive database of new drug development projects, we investigate whether successful drug launches within an established pharmaceutical firm's portfolio influence the likelihood of the big pharma sustaining its partnerships with biotech start-ups. We also consider whether this influence is moderated by drug types or drug development phases.

115-1697 Adapting To Unknown Unknowns: Shepherding Radical Innovations To Market

Gulru Ozkan-Seely, Associate Professor, University of Washington Bothell, United States

Surya Pathak, Professor, University of Washington Bothell, United States

Mohan Tatikonda, Professor, Indiana University, United States

We investigate adaptive mechanisms employed for novel innovation projects involving high uncertainty and ambiguity. Data is collected from sixteen NPD projects from one organization, and an analytical model is developed to capture adaptation strategies and outcomes. We show that adaptive range widely, from taking no action to modifying ultimate goals.

115-1979 How modification creates innovation that leads to a new product

Mir MD Ashfaque Sumon, Student, University of South-Eastern Norway, Norway

In this contemporary world, customers always expect new products as well as updates on existing products. This continuous change in customers' demand can be satisfied by modifications to create innovation. This article delineates how modifications create value in the technology with a conception.

115-2026 Maximizing Equipment Profitability Through Investments in Employee Effort and Design of Condition-Based Maintenance Policies

Mateus do Rego Ferreira Lima, Student, The Ohio State University, United States

Nathan Craig, Assistant Professor, Ohio State University, United States

Elliot Bendoly, Professor, Ohio State University, United States

We demonstrate an analytical approach to the implementation of the Internet of Things (IoT) for the design of condition-based maintenance policies. We model equipment deterioration and employee effort while considering its effect on equipment profitability. Finally, we provide managerial insights with a computational experiment based on our model.

Invited Session

64	Monday, 09:45 AM - 11:15 AM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Data-driven Social Impact Operations	
	Chair(s): Somya Singhvi	

115-0848 Eliminating Forced Labor and Coercion in the Labor Supply Chain

Felix Papier, Professor, ESSEC Business School, France

Christopher Tang, Professor, University of California Los Angeles, United States

Javaiz Mohamed Parappathodi, Student, ESSEC Business School, France

Motivated by the prevalence of labor contractors, we develop a game-theoretic model between a buyer and (several) contractor(s) that we calibrate with H2A visa data. We analyze conditions under which the buyer outsources labor recruitment and contractors employ forced labor. We derive a coercion-free supply chain contract.

115-0863 Choosing the right outcome under distribution shifts

Kirk Bansak, Assistant Professor, University of California Berkeley, United States

Elisabeth Paulson, Assistant Professor, Harvard Business School, United States

Dominik Rothenhaeusler, Assistant Professor, Stanford University, United States

Data-driven assignment of refugees to geographic localities has received increasing attention in recent years. In considering and implementing assignment algorithms, policymakers must choose their specific metric of success. This work considers the problem of choosing the "right" outcome to target in the presence of distribution shifts.

115-0867 In-Store Inventory Rotation and Expiration Food Waste: Evidence from a large European Food Retailer

Nitish Jain, Assistant Professor, London Business School, United Kingdom

Ashish Kabra, Assistant Professor, university of maryland, United States

Varun Karamshetty, Assistant Professor, National University of Singapore, Singapore

Monday, 09:45 AM - 11:15 AM

In-store inventory rotation -- from a retailer's storeroom to its shelves -- is a widely acknowledged driver of expiration food waste (EW). We propose a novel methodology for computing the upper and lower bounds of inventory rotation-led waste, using a commonly recorded quadruple of variables -- {closing-stock, sales, delivered-quantity, EW}.

115-1946 Increasing Charity Donations: A Bandit Learning Approach

Divya Singhvi, Assistant Professor, New York University, United States

Somya Singhvi, Assistant Professor, University of Southern California, United States

In this work, we analyze the problem of increasing charity donations on online platforms with unknown donor preferences and develop a rate-optimal bandit learning algorithm to solve this problem.

Invited Session**67**

Monday, 01:45 PM - 03:15 PM, Celebration 1

Track: Retail Operations

Invited Session: **Inventory and Assortment Management**

Chair(s): Stanley Lim

115-0580 Inventory Risk and Sales Effort Decisions: Implications for Incentive Design

Sreekumar Bhaskaran, Associate Professor, Southern Methodist University, United States

Canan Savaskan, Associate Professor, Southern Methodist University, United States

Tom Tan, Associate Professor, Southern Methodist University, United States

In this paper, we study the impact of inventory risk allocation on the sales effort decisions of such independent agents. We also test and validate the key theoretical predictions using a novel dataset of cookie sales from a large local council of the Girl Scout organization.

115-0765 Taming Uncertainties of Returns: A Smart Pricing Policy combined with a Simple Inventory Policy

Alys Liang, Student, University of Michigan - Ann Arbor, United States

Stefanus Jasin, Associate Professor, University of Michigan, United States

Joline Uichanco, Associate Professor, University of Michigan, United States

Returns have cost retailers hundreds of billions of dollars in the US. We show that uncertainties in both demands and returns can be effectively managed by an easy-to-implement heuristic that combines an adaptive pricing policy with a simple replenishment policy. Our results can be extended to various business scenarios.

115-0883 Online Product Display Optimization

Alara Tascioglu, Student, Koc University, Turkey

Gurhan Kok, Professor, Koc University, Turkey

Selcuk Karabati, Professor, Koc University, Turkey

We develop an extended MNL maximizing expected profit margin per consumer by optimizing product ranking/positioning and location size in an online store's first page where locations are formed by "combining" the smallest ones. Our numerical study shows 34.7% increase in expected profit margin per customer by introducing "combined locations".

115-0919 Inventory Reservation and Allocation for Multi-Item Orders with Uncertain Supply Lead Times and Demand Patterns

Jinjia HUANG, Post Doc/Researcher, IORA, National University of Singapore, Singapore

Stanley Lim, Assistant Professor, Michigan State University, United States

Chung-Piaw Teo, Professor, National University of Singapore, Singapore

We develop an efficient inventory reservation and allocation policy to fulfill multi-item orders in a warehouse. We account for correlated demand patterns and forecast order-level supply lead times by using machine learning techniques. We demonstrate the efficacy of the proposed approach using transaction and supply data from a furniture retailer.

Invited Session**68**

Monday, 01:45 PM - 03:15 PM, Celebration 2

Track: Behavioral Operations Management

Invited Session: **Behavioral Operations Management in Service Industry**

Chair(s): Raymond Lei Fan

115-0309 Cost-quality tradeoff in nurse staffing: an exploration of USA hospitals facing market competition

Xiaosong (David) Peng, Professor, Lehigh University, United States

Yuan Ye, Assistant Professor, California State University Sacramento, United States

Raymond Lei Fan, Assistant Professor, Grand Valley State University, United States

Xin Ding, Assistant Professor, Rutgers Business School, United States

Aravind Chandrasekaran, Professor, Ohio State University, United States

The study identifies three ranges of nurse staffing in which hospitals will likely experience simultaneous improvements, a tradeoff or simultaneous decline of care quality and operating costs when investing in more nursing capacity. Hospitals should adjust nurse staffing levels to the right directions to achieve better care.

115-0573 Nudging Green but Slow Shipping Choices in Online Retail

Yeonjoo Lee, Student, University of Minnesota, United States

Karen Donohue, Professor, University of Minnesota, United States

While fast delivery helps retailers to stay competitive, it often leads to worse environmental outcomes. We study how to nudge online retail customers to voluntarily choose slower but greener delivery. Through a series of experiments, we test what types of information are most effective in which context and why.

115-0596 Financial Effects of Health Information Exchange and Health Information Organization on Healthcare Operations

C. Christopher Lee, Professor, Central Connecticut State University, United States

Young Sik Cho, Associate Professor, Jackson State University, United States

Ruoqing Zhang, Assistant Professor, Central Connecticut State University, United States

Yong-Taek Min, Assistant Professor, Florida Gulf Coast University, United States

Monday, 01:45 PM - 03:15 PM

This paper explored how the Health Information Exchange (HIE) and Health Information Organization (HIO) contributed to the hospital financials. This study hypothesized HIE/HIO-participating hospitals would achieve better financial position than non-participants or the industry average. This research performed a financial statement analysis on the 2020 AHA datasets.

115-1631 Can food producers rely on their employee drivers for on-time deliveries?

Feng Cheng, Assistant Professor, Towson University, United States

Chaodong Han, Professor, Towson University, United States

Stella Tomasi, Professor, Towson University, United States

Employee drivers are preferred for on-time delivery performance. But hardly any research explores whether the use of employee drivers associates with superior delivery performance despite the non-driving service costs involved in shipments. Our paper investigates the tradeoff between delivery delays and service efficiency with different employee modes of drivers.

Invited Session

69	Monday, 01:45 PM - 03:15 PM, Celebration 3	Track: Healthcare Operations Management
	Invited Session: Empirical Assessments of Health Systems	
	Chair(s): David Rea	

115-0379 The Value of Health Information Technology Interoperability: Evidence from Interhospital Transfer of Heart Attack Patients

Yao Li, Assistant Professor, Southern University of Sci and Tech, China

Lauren Lu, Professor, Dartmouth College, United States

Feng (Susan) Lu, Associate Professor, Purdue University, United States

Jian Chen, Professor, Tsinghua University, China

This study empirically assesses the value of HIT interoperability in the interhospital transfer process of heart attack patients. We show that HIT interoperability shortens the throughput time of interhospital transfer, but has little effect in reducing duplicate testings.

115-0651 The effects of specialist visits on health outcomes, an investigation of irregularly sampled time series

Benjamin Williams, Assistant Professor, Department of Business Information & Analytics, United States

We investigate a highly dimensional, time series panel to study the impact that visiting a specialist doctor has on eGFR. The dataset consists of irregularly sampled patient visits, making usual inference difficult. We leverage a quasi-experimental design and propensity score matching to employ a difference-in-difference model to examine this effect.

115-0783 The Effect of Pharmacies on Health Equity

Umit Celik, Student, UNC Kenan-Flagler Business School, United States

Bradley Staats, Professor, University of North Carolina Chapel Hill, United States

We develop measures for Health Equity in pharmacies. After calculating overall benchmarks, we compare pharmacies to the benchmark and suggest better operations strategies to contribute to Health Equity. We use causal inference and machine learning in econometrics analysis.

115-1241 Effect of Hospital Utilization on Interhospital Transfer Decisions

Han Ye, Associate Professor, Lehigh University, United States

David Rea, Assistant Professor, Lehigh University, United States

Raymond Lei Fan, Assistant Professor, Grand Valley State University, United States

Xiaosong (David) Peng, Professor, Lehigh University, United States

With a large data set containing all ED and inpatient encounters from the state of Florida, we provide empirical evidence for the effects of ED utilization, inpatient ward utilization, insurance status, and other factors on inter-hospital transfer decisions.

Contributed Session

70	Monday, 01:45 PM - 03:15 PM, Celebration 4	Track: Healthcare Operations Management
	Contributed Session: Inventory Management and Supply Chain for Healthcare	
	Chair(s): Aaron Ratcliffe	

115-0336 Systematic Literature Review of Inventory Sharing in Healthcare Supply Chains

Ilias Vlachos, Professor, Excelia Business School, France

Panniphat Atcha, Student, Cranfield University, United Kingdom

This study conducts a systematic literature review of inventory sharing in healthcare supply chains. Descriptive and thematic analyses (geographical, stakeholder, incident analysis etc) uncovered benefits (shortage reduction, cost minimisation, wastage mitigation) and barriers (IT infrastructure, social systems, cost, supply chain operations). Future research opportunities include leaning the supply chains.

115-1740 IT Vendor Sourcing Strategies: Impacts of Vendor Turnover & Concentration on Hospital Performance

Aaron Ratcliffe, Assistant Professor, Appalachian State University, United States

Joonghee Lee, Assistant Professor, Appalachian State University, United States

Trent Spaulding, Associate Professor, Appalachian State University, United States

Monday, 01:45 PM - 03:15 PM

Too many hospital IT vendors burdens employees with increased training and redundancy; whereas fewer improves integration but increases vendor bargaining power and decreases hospital agility and digital innovativeness. We investigate the impact of vendor consolidation and turnover on quality, patient experience, and financial performance using US hospital data from 2012-2018.

115-2033 Rationing Scarce Healthcare Capacity: A Study of the Ventilator Allocation Guidelines During the Covid-19 Pandemic

David Anderson, Assistant Professor, Villanova University, United States
Tolga Aydinliyim, Associate Professor, Zicklin School of Business, United States
Margret Bjarnadottir, Assistant Professor, University of Maryland, United States
Eren Cil, Associate Professor, University of Oregon, United States
Michaela Anderson, Assistant Professor, Medical School, United States

Using NYS as an example, we study the existing approaches to allocate scarce ventilator capacity and propose alternatives. We show that, by taking into account both mortality risk and resource use duration, triage teams can improve expected survival rates as well as allocate capacity more equitably across different racial demographics.

Invited Session

Monday, 01:45 PM - 03:15 PM, Celebration 5 Track: Healthcare Analytics

71 Invited Session: Data Analytics for Social Goods

Chair(s): Pengyi Shi Xiaoquan Gao

115-0744 A Novel Spatio-Temporal Model for Improving Public Health Surveillance: An Application to Opioid-Related Overdose Deaths

Che-Yi Liao, Student, Georgia Institute of Technology, United States
Gian-Gabriel Garcia, Assistant Professor, Georgia Institute of Technology, United States
Kamran Paynabar, Assistant Professor, Georgia Institute of Technology, United States
Mohammad Jalali, Assistant Professor, Harvard University, United States

We develop a Spatio-Temporal Mutually Exciting Point Process with Dynamic network (STEMMED) to provide accurate forecasts of local OOD trends and highlight complex interactions between OODs across communities and drug types. Moreover, STEMMED enhances synergies between local and federal government entities, which is critical to designing impactful policy interventions.

115-1187 Breaking the Vicious Cycle of Recarceration with Incarceration Diversion Optimization

Xiaoquan Gao, Student, Purdue University, United States
Pengyi Shi, Associate Professor, Purdue University, United States
Nan Kong, Associate Professor, Purdue University, United States

We study incarceration-diversion decision problem to reduce jail overcrowding. To balance tradeoffs among congestion, reoffending, and violation, we build a large-scale MDP model and prove the optimality of monotone policy and convexity of value functions, implicating the optimality of nontrivial randomized policy. We leverage a two-timescale approach for algorithmic solutions.

115-1202 The Impact of Senior Living Facilities on Healthcare Utilization and Outcomes

Minje Park, Post Doc/Researcher, Columbia University, United States
Carri Chan, Professor, Columbia University, United States
Ann Bartel, Professor, Columbia University, United States
Fanyin Zheng, Assistant Professor, Columbia University, United States

Recently, the number of senior living facilities - housing arrangements designed exclusively for older adults - is rapidly growing in the United States to serve the growing population of older adults. This research studies the impact of senior living facilities on healthcare utilization and health outcomes of Medicare enrollees.

115-1637 Personalized Community-based Approach to Diabetes Care in Lower Middle Income Countries

Katherine Adams, Student, University of Wisconsin-Madison, United States
Justin Boutilier, Assistant Professor, University of Wisconsin-Madison, United States
Yonatan Mintz, Assistant Professor, University of Wisconsin-Madison, United States
Sarang Deo, Associate Professor, Indian School of Business, India

Diabetes detection and management is critical in lower-middle-income countries. One proposed solution is using Community Health Worker (CHW) programs to provide affordable and culturally tailored interventions. We propose an optimization framework to personalize CHW visits to maximize glycemic control at a community-level.

Invited Session

Monday, 01:45 PM - 03:15 PM, Celebration 6 Track: POM-Finance Interface

72 Invited Session: Supply Chain Finance

Chair(s): Qi Wu Sridhar Seshadri

115-0229 Using IoT to Mitigate Supply Chain Disruptions

Mili Mehrotra, Associate Professor, University of Illinois, United States
William Schmidt, Assistant Professor, Cornell University, United States

Monday, 01:45 PM - 03:15 PM

IoT can provide companies with an early warning system to more accurately assess the duration of a disruption. We quantify the disruption mitigation benefits of early and accurate disruption duration information using the supply chain and production data from a multinational division of a Fortune 100 manufacturing firm.

115-0832 Mitigating Shortage Risk in the Newsvendor via Procurement Options Contracts

Ran Ji, Assistant Professor, George Mason University, United States
Bardia Kamrad, Professor, Georgetown University, United States
Sandeep Dahiya, Associate Professor, Georgetown University, United States

We extend the newsvendor model in a contingent claims context by introducing an option contract given a required service level constraint and capacity constraint. The retrieval option is transcribed by an up-front reservation level and allows the procurer to exercise the contract. Tractable reformulation and analytical solutions are investigated.

115-0905 Effects of Financial Constraints on Financing Choices and Operational Decisions

Anqi Wu, Assistant Professor, Florida International University, United States
Qi Wu, Assistant Professor, Case Western Reserve University, United States
Sridhar Seshadri, Professor, University of Illinois Urbana-Champaign, United States

This study considers multiple financial and operational factors in a supply chain. It empirically investigates 1) the causal impacts of financial constraints on inventory decisions of firms, 2) the impact heterogeneity across different firms and time periods, and 3) the mechanisms through which these heterogeneous impacts manifest.

Contributed Session

74	Monday, 01:45 PM - 03:15 PM, Celebration 8	Track: Sustainable Operations Management
	Contributed Session: Closed Loop Supply Chain Management (I)	
	Chair(s): Ebenezer Adaku	

115-0169 Choosing the Right Remanufactured Product Assortment: An Empirically Grounded Analytical Investigation

Mengyun Zhang, Student, Texas A&M University, United States
Neil Geismar, Professor, Texas A&M University College Station, United States
James Abbey, Associate Professor, Texas A&M University College Station, United States
Huseyn Abdulla, Student, Texas A&M University College Station, United States

Although remanufactured products are traditionally defined to have the same quality as new products, many sellers (e.g., Amazon, Back Market, Dell Outlet) currently offer remanufactured electronic products with cosmetic imperfections. Why do vendors offer remanufactured products differently? How should vendors optimally offer remanufactured products?

115-0798 Approximation Algorithms for Lost-sales Inventory Systems with Remanufacturing

Xiting Gong, Associate Professor, The Chinese University of Hong Kong, China
Suting Liu, Student, The Chinese University of Hong Kong, China

We develop the first approximation algorithms for two classes of lost-sales inventory systems with remanufacturing. We develop a modified-dual-balancing policy for pure remanufacturing systems and a dual-balancing policy for hybrid manufacturing/remanufacturing systems. Both policies admit worst-case performance guarantee of two under associated demand processes and mild conditions on system parameters.

115-0828 Acquisition of Used Products for Remanufacturing

Akshay Mutha, Assistant Professor, University of Vermont, United States
Saurabh Bansal, Associate Professor, Penn State University University Park, United States

We develop models to analyze the process of acquiring used products for remanufacturing. We perform numerical analyses to show the applicability of our models.

115-1526 The effect of institutional pressures on environmental performances

Alice Madonna, Student, University of Bergamo, Italy
Albachiara Boffelli, Assistant Professor, Università Degli Studi Di Bergamo, Italy
Matteo Kalchschmidt, Professor, Università Degli Studi Di Bergamo, Italy

This study uses the institutional theory to analyze how pressures from investors and customers are effective in influencing organizations' environmental performance. The objective is to show how the different combination of pressures influences the performances, using data from the Carbon Disclosure Project.

115-1737 Reverse Logistics: An Anatomical Perspective

Ebenezer Adaku, Associate Professor, GIMPA, Ghana
Raphael Aryee, Student, Ghana Institute of Management and Public Administration (GIMPA), Ghana

The need to integrate sustainable practices such as reverse logistics (RL) in business operations cannot be over emphasised. However, a broad framework that articulates all the aspects of RL is not readily available in the extant literature. This study seeks to address this gap in RL research.

Invited Session

75

Monday, 01:45 PM - 03:15 PM, Celebration 9

Track: Supply Chain Management

Invited Session: OM with New Technologies

Chair(s): Yao Cui

115-0466 An Economic Model of "Fulfilled By Amazon" (FBA)

Garud Iyengar, Professor, Columbia University, United States
 Yuanzhe Ma, Student, Columbia University, United States
 Thomas Rivera, Assistant Professor, McGill University, Canada
 Fahad Saleh, Associate Professor, Wake Forest University, United States
 Jay Sethuraman, Professor, Columbia University, United States

We provide an economic model of an e-commerce retail platform (e.g., Amazon) that offers a fulfillment service (e.g., "Fulfilled By Amazon") to merchants that sell on its platform. Our main result is that the platform extracts all welfare whenever low service quality merchants possess sufficiently high product quality.

115-1046 Contract Tokenization in the Renewable Energy Market

Rowena Gan, Assistant Professor, Southern Methodist University, United States
 Rong Li, Associate Professor, Syracuse University, United States

Endorsed by the blockchain technology, contracts can be digitally recorded and stored in crypto tokens, which is referred to as being tokenized. Using the renewable energy market as a backdrop, we study the impact of contract tokenization on different parties in the industry based on their respective incentives.

115-1574 3D Printing Rental Package Design

Brian Tomlin, Professor, Dartmouth College, United States
 Yue Zhang, Assistant Professor, Penn State University University Park, United States

We study the design of rental packages for 3D printers. The optimal rental packages are obtained analytically with insights revealed on 3D printing technical service offering.

115-1915 Quality and Welfare Implications of Product Traceability in Supply Chain

Lijian Lu, Assistant Professor, Hong Kong University of Science and Technology, China
 Ruxian Wang, Professor, Johns Hopkins University, United States
 Xinyi Zhou, Student, Hong Kong University of Science and Technology, China

Motivated by the recent trend of increasing transparency and traceability in the food and pharmaceutical industries, we investigate the impacts of traceability on a supply chain in which a buyer (e.g., a procurement agent or retailer) sources a product from multiple competing suppliers.

Invited Session

76

Monday, 01:45 PM - 03:15 PM, Celebration 10

Track: Supply Chain Management

Invited Session: Food and Agriculture Supply Chains

Chair(s): Nicholas Petruzzi Karthik Murali

115-0560 Waste Reduction of Perishable Products through Markdowns at Expiry Dates

Arnoud den Boer, Associate Professor, University of Amsterdam, Netherlands
 Hermanus Jansen, Assistant Professor, University College Roosevelt, Netherlands
 Jinglong Zhao, Assistant Professor, Boston University, United States

We study whether giving discounts for perishable products on their expiry dates can simultaneously reduce waste and increase profit. Our results imply that sellers of perishable products can use simple pricing rules to simultaneously reduce waste and increase profit.

115-0702 Optimal Pricing Policies for Precision Agriculture Technologies

Heng Chen, Assistant Professor, University of Nebraska Lincoln, United States
 Ying Zhang, Assistant Professor, Clemson University, United States

Agricultural technology providers have used outcome-based pricing to promote the application of precision agriculture. We explore the implications of outcome-based pricing on the adoption rate of precision agriculture and the benefits to farmers and technology providers. We build a two-period game model that incorporates providers' learning through experience.

115-1107 Strategic sell-by dates and their implications for retail-level food waste

Karthik Murali, Assistant Professor, Oregon State University, United States
 Nicholas Petruzzi, Professor, University of Wisconsin-Madison, United States
 Aditya Vedantam, Assistant Professor, University of Buffalo, United States

Grocery stores in the U.S. throw away 16 billion tons of food each year due to expiration. In this study, we develop a game-theoretic model to examine the strategic motivations behind a manufacturer's choice of sell-by dates and the corresponding implications for food waste at the retail level.

115-1764 Reducing waste in foodservice

Ekaterina Astashkina, Assistant Professor, Ross School of Business, United States

Monday, 01:45 PM - 03:15 PM

Izak Duenyas, Professor, University of Michigan - Ann Arbor, United States

Yuwen Hu, Student, University of Michigan - Ann Arbor, United States

Feng Tian, Assistant Professor, University of Hong Kong, Hong Kong, China

Food waste is a global environmental problem that spans multiple industries, including foodservice. We build a stylized model of a food provider that faces a consumer with uncertain demand. We identify the most effective strategies that reduce post-consumer food waste.

Invited Session

77	Monday, 01:45 PM - 03:15 PM, Celebration 11	Track: Social Media and Web 2.0
	Invited Session: Social Media and Emerging Technologies	
	Chair(s): Fujie Jin	

115-1297 Store Assortment 2.0: A Comprehensive Retail Analytics Framework to Identify Non-Digital Products

Ping Tang, Student, UT Dallas, United States

Rajiv Garg, Assistant Professor, Emory University, United States

Anuj Kumar, Associate Professor, University of Florida, United States

Amit Mehra, Professor, University of Texas Dallas, United States

In this paper we present a framework to use review data to extract (non)digital features and predict product placement based on description text - something that is created with new product launch.

115-1305 Empowering or Entrenching in Governance of Decentralized Autonomous Organization: Examining Pre-voting Discussion in On-Chain Voting

Jing Tian, Assistant Professor, Pennsylvania State University, United States

We focus on evaluating how individual participants in Decentralized Autonomous Organizations (DAOs) exert their influences on the on-chain voting of governance proposals. We examine how the use of off-chain pre-voting online discussion of governance proposals influences the outcomes of on-chain voting.

115-1312 Cloud Cost Optimization: Model, Bounds, and Asymptotics

Zihao Qu, Student, The University of Texas at Dallas, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Motivated by the rapid growth of the Cloud Cost Management and Optimization (CCMO) industry to support the exploding cloud-computing market, we study an infinite-horizon, stochastic optimization problem from the viewpoint of a firm that employs cloud resources to process incoming orders (or jobs) over time.

115-1370 The Competition in Online Reputation: a Mean Field Game Approach

Mingwen Yang, Assistant Professor, University of Washington, United States

Online reputation is critical for the success of a business. Sellers make efforts to improve their online reputation to attract more future customers. We model the sellers' competition in product ratings using a mean field game model and verify the model using real world data.

115-1392 Can Sports Knowledge Sharing Promote Group Sports Behavior? -- A communication visibility empirical study

Lei Wang, Post Doc/Researcher, Shandong University, Chile

Jianghua Zhang, Professor, Shandong University, China

Tuojuan Li, Associate Professor, Shandong University, China

This paper offers a theory of sports communication visibility based on an empirical study of the implementation of a sport-related online social networking site in college. Group sport behavior were promoted by sports knowledge sharing innovation through the mediating effect of the visibility of sports information dissemination.

Invited Session

78	Monday, 01:45 PM - 03:15 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Managing Donations in Humanitarian Operations	
	Chair(s): Gloria Urrea	

115-0774 To Earmark or to Non-Earmark? The Role of Control, Transparency and Warm-Glow

Ozalp Ozer, Professor, University of Texas Dallas, United States

Gloria Urrea, Assistant Professor, University of Colorado Boulder, United States

Sebastian Villa, Assistant Professor, University of New Mexico, United States

Empirical evidence of how earmarking influences donors is scarce. Using three online experiments, we investigate how, when and why earmarking affects three donors' decisions as well as three mechanisms potentially driving the earmarking effect (i.e., control, operational transparency, warm-glow). Our findings provide clear insights to design fundraising campaigns more effectively.

115-0873 Competing with Cause Marketing: Transactional vs. Non-Transactional Campaigns

Arian Aflaki, Assistant Professor, Joseph M. Katz Graduate School of Business, United States

Esther Gal-Or, Professor, University of Pittsburgh, United States

Mike Gordon, Assistant Professor, Virginia Polytechnic Institute And State University, United States

Monday, 01:45 PM - 03:15 PM

Jennifer Shang, Professor, University of Pittsburgh, United States

In Cause Marketing (CM), firms donate to a cause to attract prosocial customers. We study how competition on various types of CM impacts donations and firms. We find that competition and customer interest in contributions to the cause can backfire and reduce the total donations and hurt firms.

115-1183 The Influence of Market Uncertainty on Donation Decisions

Gordon Burtch, Associate Professor, Boston University, United States

Gloria Urrea, Assistant Professor, University of Colorado Boulder, United States

Sebastian Villa, Assistant Professor, University of New Mexico, United States

Eunae Yoo, Assistant Professor, Indiana University Bloomington, United States

Market uncertainty may impact the valuation and, therefore, the donation of certain assets (e.g., stock, cryptocurrency). Using data from a Bitcoin crowdfunding platform, we show empirically that donors' decisions are affected by market uncertainty. We then conduct an experimental study to uncover the underlying mechanisms.

115-1262 Cause Marketing as a Strategic Tool for Firms & an Opportunity for NGOs

Vinit Tipnis, Student, Kelley School of Business, United States

Sebastian Villa, Assistant Professor, University of New Mexico, United States

Fei Gao, Assistant Professor, Indiana University Bloomington, United States

Alfonso Pedraza, Professor, Indiana University, United States

In cause marketing campaigns, firms donate a percentage of their sales revenue to partnering non-governmental organizations as a strategy to increase sales. We investigate how and when earmarked (i.e., restricted) and flexible (i.e., unrestricted) donations affect consumers' purchase intent. Our study provides clear recommendations both to firms and NGOs.

Contributed Session

79

Monday, 01:45 PM - 03:15 PM, Celebration 13

Track: Teaching/Pedagogy in POM

Contributed Session: Tutorial: Teaching Operations Management and Analytics (II)

Chair(s): Ardavan Asef-Vaziri

115-0417 Teaching Analytics without Coding

Yao Zhao, Professor, Rutgers University, United States

Many students like analytics, but few like coding. This workshop shares teaching plans and modules on teaching analytics to general audience without coding. The awarding winning cases and analysis tools focus on problem discovery and solving skills in business intelligence and supply chain management.

115-0687 Building the Teaching Material of the Operations Management Course Around a Web-Based Simulation Game

Ardavan Asef-Vaziri, Professor, California State University Northridge, United States

We explain how to teach the core concepts of an operations management course, including descriptive statistics, time-series analysis, regression and association, visualization, process flow analysis, capacity planning, waiting line analysis, continuous and periodic ordering, newsvendor problem, and re-ordering points around the virtual environment of a web-based simulation game.

Invited Session

80

Monday, 01:45 PM - 03:15 PM, Celebration 14

Track: Service Operations

Invited Session: Innovative Methods in Service Operations

Chair(s): Sriram Venkataraman

115-0281 How Do Producers Fare with Fair Trade?

Ying Zhang, Assistant Professor, Clemson University, United States

Yen-Ting Lin, Associate Professor, University of San Diego, United States

Adem Orsdemir, Assistant Professor, University of California Riverside, United States

In this paper, we examine the impact of fair trade certificate on a fair trade retailer's decisions, profitability and participating producers' welfare. We also examine a retailer's choice between fair trade and direct trade, which is another common socially responsible sourcing strategy.

115-1032 Determining When to Have a Vacation

Fariborz Partovi, Professor, Drexel University, United States

This article has presented an analytical model for eliminating poor dates for vacation and three models for ranking and selecting the best timing to vacation in a resort. The models are all minimizing the subjective nature of the decision-making process.

115-1396 Up to speed: the influence of timing and synergy on knowledge transfer

Peter Carrera, Student, Ohio State University, United States

Kenneth Boyer, Professor, Ohio State University, United States

Aravind Chandrasekaran, Professor, Ohio State University, United States

Research shows that performance feedback allows organizations to learn better. This study explores the effects of performance feedback timing and synergy on learning. We use data from the hospitality industry to investigate these relationships.

Monday, 01:45 PM - 03:15 PM

Invited Session

81	Monday, 01:45 PM - 03:15 PM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: AI and Platform	
	Chair(s): Si Xie	

115-0845 Managing social interactions on two-sided live-streaming platforms - A focus on streamer decisions.

Pearl Yu, Student, New York University, United States
Runshan Fu, Assistant Professor, New York University, United States
Anindya Ghose, Professor, New York University, United States

Streamer-viewer interaction is considered the key to live-streaming. Previous literature has focused on viewer engagement incentives. We propose a single-agent dynamic structural model with HMM to investigate how viewer engagement intensity affects streamer decisions. We find that streamers can experience burnout from managing interactions, offering guidance to double-sided platform management.

115-0926 What is the role of digital value-added service in the sharing economy?

Daozhi Zhao, Professor, Tianjin University, China
Xinyue Tan, Student, Tianjin University, China
Mingyang Chen, Assistant Professor, Henan University, China
Ziwei Yuan, Student, Tianjin University, China
Shuang Yang, Student, Tianjin University, China

Many manufacturers are beginning to provide products with digital value-added service. When manufacturers consider whether to provide digital value-added service, they face the challenge of the sharing economy. We examine the impact of digital value-added service on the manufacturer's profit, sharing platform's profit, and consumer surplus.

115-1045 The Role of Virtual Livestreamer in Livestreaming Shopping using AI

Si Xie, Student, The University of Texas at Dallas, United States
Amit Mehra, Professor, University of Texas Dallas, United States
Siddhartha Sharma, Assistant Professor, Indiana University Bloomington, United States

A livestream is essentially a virtual showroom where viewers watch livestreamers present a series of products in real time. Some platforms have begun introducing Virtual Livestreamers using AI to livestream shopping sessions to generate more sales, attract more traffic and grab more viewers' attention. We analyze the mechanism driving these

115-1548 Impacts of AI on Reviews & Outcomes

Rachit Kamdar, Student, Robert H. Smith School of Business, United States
Siva Viswanathan, Professor, University of Maryland, United States

We study the use of an textual AI system on an online review platform and find a significant bias in the adoption of the AI system, subsequently, we find that the usage of AI impacts the reviews by making them shorter and less helpful but make them more diverse.

Invited Session

82	Monday, 01:45 PM - 03:15 PM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Operational Innovation	
	Chair(s): Morvarid Rahmani	

115-0105 Hybrid Entrepreneurship: An Operational Analysis

Zeya Wang, Student, Georgia Institute of Technology, United States
Morvarid Rahmani, Associate Professor, Georgia Institute of Technology, United States
Karthik Ramachandran, Professor, Georgia Institute of Technology, United States

We investigate the debate between fully committed entrepreneurship and a hybrid approach in which the entrepreneur retains a stable "day job". A model-based investigation of the trade-offs reveals conditions under which the hybrid approach is optimal, and when it is optimal to make a full commitment.

115-0341 Tragedy of the Commons? Impact of the Prosumers in the Energy System

Ming Hu, Professor, University of Toronto, Canada
Junghee Lee, Assistant Professor, University of Notre Dame, United States
Yinliang (Ricky) Tan, Associate Professor, University of Houston, United States
Lai Wei, Assistant Professor, Shanghai Jiaotong University, China

More people produce renewable energy and rely less on the grid, becoming prosumers. We show that while more prosumers reduce the total energy generation cost, they may increase the demand volatility of the grid, leading to a higher electricity price. We analyze how to share the benefits and costs fairly.

115-0494 Co-creation in New Product Development: Collaborating with a Shared Supplier

Abhishek Roy, Assistant Professor, Temple University, United States

Monday, 01:45 PM - 03:15 PM

In many industries, core component suppliers are shared by competing manufacturers, who may benefit from co-creating new products jointly with their shared suppliers. We analytically investigate the strategic trade-offs that arise when competing buyers decide to co-create a common core component with the shared supplier.

115-1645 Navigating pre-competitive collaborations: an extended supply network perspective

Tomás Harrington, Associate Professor, University of East Anglia, United Kingdom
Nitin Joglekar, Associate Professor, Questrom School of Business, United States
Jagjit Srail, Professor, University of Cambridge, United Kingdom

We examine innovation outcomes within the pharmaceutical sector, specifically at the intersection of new manufacturing process technologies and digital supply chain transformations. Our longitudinal study over 10 years charts interventions involving a portfolio of projects to explore how pre-competitive collaborations are leveraging multiple stakeholders and enabling effective pathways to implementation.

Invited Session

83	Monday, 01:45 PM - 03:15 PM, Coral Spring 2	Track: Emerging Topics in Operations Management
	Invited Session: Advanced Models in Customer Analytics and Retail Operations	
	Chair(s): Guang Li Ying Cao	

115-0672 Effect of the Seller's Delay in Response on an Online Marketplace Bargaining

Guihua Wang, Assistant Professor, University of Texas Dallas, United States
Wen Zhang, Assistant Professor, Baylor University, United States

Using a unique data set from eBay's best-offer platform and an instrumental variable approach, we find that in online marketplace bargaining, the seller's delay in response in a short period could increase the buyer's concession, but waiting too long to respond could backfire.

115-0979 Pricing and Returns in the Era of Big Tech: Implications of Information Asymmetry Reversal

Kiarash Hassani, Student, Queen's University, Canada
Murray Lei, Assistant Professor, Queen's University, Canada
Anton Ovchinnikov, Professor, Queens University, Canada

We present a model to optimize the return policy of a monopolistic seller, who may have better information about consumers' tastes than the customers themselves. We analyze how return policy, tech-enabled superior information, and return hassles affect the firm's profit and consumer surplus. The results show that Pareto-improving situations exist.

115-1085 Selling and Renting Mechatronics (Digitally Controlled Physical Goods)

Xianfeng Meng, Student, Queen's University, Canada
Guang Li, Assistant Professor, Queen's University, Canada
Anton Ovchinnikov, Professor, Queens University, Canada

Recent technological advances allow physical goods firms to create products with identical hardware that are digitally controlled to allow for differentiation. We present a stylized model to explore when physical goods firms should adopt digitally-enabled product differentiation instead of the traditional product line design with high- and low-end product.

115-1657 Natural Language Processing for Understanding Customer Voices in OM

Cecilia Ying, Student, Queen's University, Canada
Stephen Thomas, Senior Lecturer, Queen's University, Canada
Tefamariam Abuhay, Post Doc/Researcher, Queen's University, Canada

The ability to identify customer characteristics and measure customer satisfaction affects product development, process design, inventory forecasting and management. Here, we introduce Conversation Analytics (CA), a method which combines embeddings from large language models, such as GPT3, with unsupervised machine learning for extracting insights from customer conversation logs.

Contributed Session

84	Monday, 01:45 PM - 03:15 PM, Blue Spring 1	Track: Supply Chain Risk Management
	Contributed Session: Managing Supply Chain Risk	
	Chair(s): Matthew Vepraskas	

115-0626 Cash hoarding as a way to mitigate against disaster risk: the case of multinationals

Andres Ramirez, Associate Professor, Bryant University, United States
Nezih Altay, Professor, Depaul University, United States

One of the main functions of cash is to serve as insurance against operational glitches. The level of cash held is affected by the perceived risk levels. Natural disasters such as earthquakes create uncertainty for the firm. International exposure and diversification of MNCs should reduce their exposure to disaster risk.

115-1279 Sustainability risks in global supply chains: A conceptual framework

Abhijeet Ghadge, Associate Professor, Cranfield University, United Kingdom

Sustainability risk is growing area due to increasing pressure from consumers and governments. However, there is lack of a generalised theory and mitigation strategy for sustainability risk in supply chains. This study aims to provide insights and framework into the identification, assessment and mitigation of sustainability risks within global supply chains.

Monday, 01:45 PM - 03:15 PM

115-1584 Supply chain risk in construction sector: Does it present opportunities?

Huy Truong Quang, Lecturer, School of Business & Management (SBM), RMIT International University, Vietnam

Duong Thi Binh An, Lecturer, Faculty of Business, FPT University, Ho Chi Minh City, Vietnam, Vietnam

Duy Tan Nguyen, Student, HEC Montréal, Canada

Our work draws on contingency theory and dynamic capability view and leverages data from a large-scale survey in Vietnam's construction industry. Unlike other supply chain risks (internal and man-made), natural risks decrease the negative risk impact on firm performance, indicating that risks present not only threats but also opportunities.

115-1735 Can Counterfeit Prevention Work? A Systems Approach to Building Counterfeit Avoidance Programs

Matthew Vepraskas, Student, The George Washington University, United States

Consumer behavior following the COVID-19 pandemic grew demand for finished technology, increasing counterfeit technology entering the supply chain. Building on prior research, a novel systems dynamics model is introduced, characteristics are established, and guidelines are drafted to mitigate the movement and purchase risks of counterfeit technology by a small business.

Invited Session

85	Monday, 01:45 PM - 03:15 PM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Operation Research in Healthcare	
	Chair(s): Kejia Hu Wang Ting	

115-0634 The Role of Surgical Consumable Standardization in Healthcare: An Empirical Study on Orthopedic Surgery

Wang Ting, Student, University of Science and Technology of China, China

Xin Ding, Assistant Professor, Rutgers Business School, United States

Kejia Hu, Assistant Professor, Vanderbilt University, United States

Yun Fong Lim, Associate Professor, Singapore Management University, Singapore

Vikram Tiwari, Associate Professor, Vanderbilt University Medical Center, United States

This paper empirically explores how the standardized configuration of surgical consumables affects the clinical performance, administrative performance, and financial performance of surgery. Our findings suggest that surgical standardization promotes quality patient care at a cost-effective price and facilitates the implementation of bundle payments effectively.

115-1135 Air Pollution and Doctors' Work Performance: Evidence from Extubation Failure in the Intensive Care Unit

Yongjian Zhu, Student, University of Science and Technology of China, China

Jingui Xie, Associate Professor, Technical University of Munich, Germany

Yugang Yu, Professor, University of Science and Technology of China, China

Zhichao Zheng, Associate Professor, Singapore Management University, Singapore

Oon Cheong Ooi, Cardiothoracic Surgeon, National University Hospital, Singapore

When examining the impacts of air pollution on the healthcare system, most studies focus on the increased demand due to air pollution-related health deterioration, taking a demand-side perspective. We extend the literature from a supply-side perspective by studying how air pollution can affect doctors' behavior and work performance.

115-1347 Simultaneous Imputation and Prediction with High-dimensional Data (SIP-HD): A Deep Learning Model for Disease Diagnosis

Zhenzhen Jia, Student, Fudan University, China

Jianqiang Hu, Professor, Fudan University, China

Kejia Hu, Assistant Professor, Vanderbilt University, United States

Qingchen Wang, Assistant Professor, University of Hong Kong, China

To achieve decent diagnostic performance when advanced medical test results are missing, our research proposes a deep learning model, SIP-HD, that simultaneously performs imputation and prediction with high-dimensional data.

115-1545 Optimizing Initial Screening for Colorectal Cancer Detection with Adherence Behavior

Yini Gao, Assistant Professor, Singapore Management University, Singapore

Yan He, Post Doc/Researcher, Singapore Management University, Singapore

Ruijie Zhang, Student, Singapore Management University, Singapore

Zhichao Zheng, Associate Professor, Singapore Management University, Singapore

We study the initial test design for early colorectal cancer detection to balance the trade-off between screening effectiveness and efficiency, considering individuals adherence behavior. We find that increasing the cutoff to the level that maximizes expected follow-ups by CRC patients can detect 104.53% more CRC incidences and prevent 80.05% colonoscopies.

115-1671 A hierarchical assignment model to allocation and scheduling courses in universities with remote work

Eduyn López, Assistant Professor, Universidad Distrital Francisco José de, Colombia

Feizar Rueda-Velasco, Associate Professor, Universidad Distrital Francisco José de, Colombia

We address a problem of allocation and scheduling courses to rooms at universities making use of a hierarchical assignment model and a mathematical programming model. It is proposed to achieve the highest possible occupation in the time slots, balancing the number of courses and some days in remote work.

Monday, 01:45 PM - 03:15 PM

Invited Session

86

Monday, 01:45 PM - 03:15 PM, Rainbow Spring 1

Track: Empirical Research in Operations Management

Invited Session: Empirical Research in Retailing and Platform

Chair(s): Chloe Glaeser

115-0884 Two-Level Order Picking

Vitaly Brazhkin, Assistant Professor, University of West Florida, United States

In this pilot study of the vertical dimension of picking in warehouses the efficiency of the two common lift truck routing policies, traversal and return, is compared in a two-tier order picking setup using simulation. The traversal policy is found superior to the return policy for most order picking densities.

115-1483 The Impact of the AI Technology on Gig Economy Workers and Phantom Stockouts

Dmitry Mitrofanov, Assistant Professor, Boston College, United States

Serguei Netessine, Professor, The Wharton School, United States

Gig economy led to unprecedented explosion of person-to-person task outsourcing: driving, food pickup and shopping is often done by someone other than consumer. To understand trade-offs in using technology to help gig workers, we conduct field experiments on a grocery shopping platform which uses AI-enabled guidance system to help shoppers.

115-1834 Cross-Channel Marketing on E-commerce Marketplaces: Impact and Strategic Budget Allocation

Qiyuan Deng, Assistant Professor, Chinese Univ of Hong Kong (Shenzhen), China

Kejia Hu, Assistant Professor, Vanderbilt University, United States

Yun Fong Lim, Associate Professor, Singapore Management University, Singapore

Using data from a world-leading seller on a popular e-commerce marketplace, we empirically verify and quantify the impact of cross-channel marketing on boosting the seller's revenue. Incorporating the empirical estimations into an optimization model, we propose a framework to allocate a seller's marketing budget across channels to maximize profit.

115-2125 Improving Human Decision-Making with Machine Learning

Park Sinchaisri, Assistant Professor, University of California Berkeley, United States

Focusing on sequential decision-making, we design a machine learning framework that can extract "best practices" from trace data and convey its insights to humans in the form of interpretable "tips". We evaluate our approach through a series of randomized controlled experiments, offering insights into the design of human-AI interfaces.

Invited Session

87

Monday, 01:45 PM - 03:15 PM, Rainbow Spring 2

Track: Operational Excellence

Invited Session: Operational Excellence in Healthcare

Chair(s): Yingchao Lan

115-0307 Enabling Frontline Employee Innovation in Hospitals - Evidence from Multiple case studies

Felix Mosner, Student, University of Cologne, Germany

Aravind Chandrasekaran, Professor, Ohio State University, United States

Fabian Sting, Professor, University of Cologne, Germany

With the occurrence of COVID-19, heightened workloads have amplified the difficulty of implementing structured innovation processes in healthcare industry once more. By turning an eye to middle managers, we conducted multiple case studies in maximum care hospitals and shed more light on their role in fostering frontline innovation performance.

115-0564 Decision Making in Healthcare

Deepa Goradia, Assistant Professor, Georgia State University, United States

Aravind Chandrasekaran, Professor, Ohio State University, United States

In this study, we explore the relationship between decision making approach and patient outcomes.

115-1057 How CMS Incentive Payments Influence Future HIT Adoption, Operational Risk and Performance in Hospitals

Rajib Dutta, Student, University of Arkansas, United States

David Dobrzykowski, Associate Professor, University of Arkansas, United States

Randy Bradley, Lecturer, University of Tennessee, United States

The Federal Government substantially incentivizes hospitals' use of certified health information technology (HIT). While HIT ought to improve operations, security of increasing amounts of patient data is a growing concern. We investigate how HIT incentives drive hospitals' future IT adoption and HIT's impact on data breaches and operational performance scores.

Invited Session

88

Monday, 01:45 PM - 03:15 PM, Barrel Spring 1

Track: POM-Marketing Interface

Invited Session: Social Network and Platform in BOM

Chair(s): Haitao (Tony) Cui Yi Zhu

Monday, 01:45 PM - 03:15 PM

115-0683 Prominent Platform and Simultaneous Search

Mao Yuan, Assistant Professor, Wuhan University, China

Yi Zhu, Associate Professor, University of Minnesota, United States

Consumers deflect limited attention to the prominent platform when they collect product information. This research examines how asymmetric attention on platforms alters retailers' price competition. Surprisingly, we find the prominent platform with more attention may have a lower profit than the non-prominent platform, because asymmetric attention can intensify retail competition.

115-0865 Understanding Customers' Expectations in Network Product Adoption: A Behavioral Investigation

Yifan Dou, Assistant Professor, Fudan University, China

Ang Gao, Associate Professor, Beijing Institute of Technology, China

Yinghao Zhang, Associate Professor, University of Cincinnati, United States

Yuanyuan Zhou, Assistant Professor, Beijing Foreign Studies University, China

This paper studies how customers form their expectations under network effects. Lab experiments suggest that the behavioral expectation deviates from the standard fulfilled expectation equilibrium, exhibiting a "rotation-to-middle" effect. We attribute this behavioral irregularity to cognitive hierarchy and anchoring-and-adjustment. We calibrate the magnitude of the behavioral tendencies through structural model estimation.

115-1691 The Blessing and Pitfall of Behavior-based Pricing under Privacy Regulation

Yunhyoung Kim, Student, Carlson School of Management, United States

Tony Haitao Cui, Professor, University of Minnesota, United States

Yi Zhu, Associate Professor, University of Minnesota, United States

We study the impact of privacy protection regulations on behavior-based pricing. Under the regulations, consumers can opt-out privacy consents to protect their data, and firms cannot track those consumers' purchase histories. We find the regulation improves consumer surplus if the risk of privacy breach is low, but deteriorates otherwise.

115-1926 Ad Blocker: A Blessing in Disguise

Jingyan Li, Student, University of Science and Technology of China, China

Quan Zheng, Associate Professor, University of Science and Technology of China, China

Shichang Li, Student, University of Science and Technology of China, China

Jie Wu, Professor, University of Science and Technology of China, China

In this paper, we study the effects of ad blocker. Using a simple model with an advertiser, a content platform and a unit of consumers, we show that the presence of ad blocker may increase the ad quality and lead to the win-win-win outcome for the three parties.

Invited Session

88	Monday, 01:45 PM - 03:15 PM, Barrel Spring 2	Track: POM-Marketing Interface
	Invited Session: Retail Operations and Analytics	
	Chair(s): Lauren Lu Yiwei Wang	

115-0768 Learning Newsvendor Problems with Intertemporal Dependence and Moderate Non-stationarities

Meng Qi, Assistant Professor, Cornell University, United States

Max Shen, Professor, University of California Berkeley, United States

Zeyu Zheng, Assistant Professor, University of California Berkeley, United States

While machine learning tools have observed increasing use in data-driven inventory management problems, most of existing work assumes independent and identically distributed data. Our work adopts comparatively more realistic assumptions and develops performance guarantees for learning data-driven contextual newsvendor problems.

115-1095 The Value of Logistic Flexibility in E-commerce

Bing Bai, Student, Washington University in St. Louis, United States

Tat Chan, Professor, Washington University in St. Louis, United States

Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

Fuqiang Zhang, Professor, Washington University St Louis, United States

In recent years, many online retailers start to explore improving other aspects of shipping experience rather than improving shipping speed to attract customers. We use the introduction of local pick-up stations by Alibaba to study the impact of improving logistic flexibility on online retailing.

115-1377 Gender Bias in Job Assignment? Evidence from Retail Frontline Managers

Ruoran Chen, Assistant Professor, Southwest Jiaotong University, China

Feng (Susan) Lu, Associate Professor, Purdue University, United States

Lauren Lu, Professor, Dartmouth College, United States

Simin Huang, Professor, Tsinghua University, China

While anecdotes suggest that workplace gender disparities widely exist, the current literature on this topic has not provided sufficient causal evidence. We empirically study the effect of gender on the job assignment of frontline managers in a large sportswear retail chain using personnel, sales, and operational data.

115-1475 The Value of Curated Box: Evidence from an Online Omnichannel Fashion Retailer

Yiwei Wang, Assistant Professor, Zhejiang University, China

Lauren Lu, Professor, Dartmouth College, United States

Monday, 01:45 PM - 03:15 PM

Curated box retailing is to send retailer-selected products to customers at regular intervals with the option to purchase or return. We implemented curated box retailing through a longitudinal field test, and then used difference-in-differences method to examine the causal effect of curated box retailing on omnichannel consumer behavior.

Invited Session

90	Monday, 01:45 PM - 03:15 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Connected supply chains	
	Chair(s): Abhishek Ghosh	

115-0140 The Strategic Role of Logistics Insurance in a Three-Party Supply Chain

Bangdong Zhi, Lecturer, University of Bristol, United Kingdom
Yilei Liu, Assistant Professor, Institute of Chinese Financial Studies of SWUFE, China
Xiaojun Wang, Professor, University of Bristol, United Kingdom

Logistics insurance has been widely used to hedge the risk in the international trading. However, its strategic role in two trading models, i.e., CIF and FOB, has not been fully examined. We apply the game theoretical model to systematically examine its impact on supply chain participants' decisions and performance.

115-1303 Blockchain Adoption Incentives in Supply Chains

Pnina Feldman, Associate Professor, Questrom Business School, Boston Unvers, United States
Yuze Li, Student, Boston University, United States
Gerry Tsoukalas, Associate Professor, Boston University, United States

Due to its transparent and immutable nature, blockchain technology is commonly perceived to enable creditability of product certification, and thus, improve product quality. Using a stylized model, we demonstrate that, counterintuitively, blockchain implementation may reduce manufacturers' compliance efforts and product quality.

115-2029 Stochastic Relay Network Design: Resilience To Supply Shocks

Himani Ananthula, Student, Kellogg School of Management, United States
Milind Sohoni, Professor, Indian School of Business, India
Achal Bassamboo, Professor, Northwestern University, United States

A relay point is a physical location in the transportation network where shipments can be relayed. We study the optimal relay network design problem robust to labor(drivers/supply) shocks under queuing framework. We discuss managerial insights into designing relay networks and provide estimates on value loss due to daily-level supply uncertainties.

Contributed Session

91	Monday, 01:45 PM - 03:15 PM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Contributed Session: Retail Management and Assortment Planning	
	Chair(s): Ismail Kirci Amirhossein Jafarzadeh Ghazi	

115-0653 Strawberry Or Vanilla This Week? How To Optimize Tailored Assortments For Variety-Seeking/Avoiding Consumers

Dorothee Honhon, Associate Professor, University of Texas Dallas, United States
Ismail Kirci, Assistant Professor, UIUC-Gies College Of Business, United States
Sumit Kunnumkal, Assistant Professor, Indian School of Business, India
Sridhar Seshadri, Professor, University of Illinois Urbana-Champaign, United States

We consider the problem of a retailer personalizing an assortment to a consumer who is variety-seeking or variety-avoiding, that is, less or more likely to make a repeat purchase. We characterize the structure of the optimal assortment in single and multi-period settings.

115-0748 Retail Product Return Management under Increased Supply Chain Expenses

Ali Shirzadeh Chaleshtari, Lecturer, Isenberg School of Management, Operations and Information Systems Department, United States
Ehsan Elahi, Associate Professor, University of Massachusetts Boston, United States

We present an inclusive analytical model capable of capturing the impacts of significant factors affecting the retail customers' behavior and using this framework, we illustrate the impact of increased supply chain expenses on customers' behavior, as well as the optimal price and refund strategies of retailers.

115-1201 Price and quality competition while envisioning a quality-related product recall

Amirhossein Jafarzadeh Ghazi, Student, University of Ontario Institute of Technology, Canada
Salma Karray, Professor, Ontario Tech University, Canada
Nader Azad, Associate Professor, Ontario Tech University, Canada

Many product recalls are caused by quality-related failures. In such recalls, effects may not only be limited to the firm selling the product but also extend to competing firms in the category. Developing a two-stage Nash game, we analyze quality and pricing strategies for competing firms facing a severe recall.

115-1374 Return or Not? Joint Pricing and Refund Optimization for Omni-channel Retailing

Shouchang Chen, Assistant Professor, Zhejiang University, China
Yun Fong Lim, Associate Professor, Singapore Management University, Singapore

Monday, 01:45 PM - 03:15 PM

Yimeng Sun, Post Doc/Researcher, Nanyang Technological University, Singapore

Zhenzhen Yan, Assistant Professor, Nanyang Technological University, Singapore

We study a return problem of a retailer selling multiple substitutable products through an online channel and a physical store. We characterize a consumer's sequential decisions on buying and returning a product using a generalized MLC model, based on which we provide a data-driven model for pricing and refund.

115-1522 The Impact of Risk-Awareness on Assortment Planning

Wenjie Huang, Assistant Professor, University of Hong Kong, Hong Kong, China

Junjie Lei, Student, University of Hong Kong, Hong Kong, China

Foundamental questions: Static and dynamic single-leg assortment planning problems, under multinomial logit model from the perspective of risk-aware decision makers, are studied. We derive efficient computational schemes and structure properties. Higher Level of risk-aversion implies larger assortment for both problems. Numerical experiments are conducted to validate the theoretical findings.

Contributed Session

93	Monday, 01:45 PM - 03:15 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Contributed Session: Blockchains and Digital Twins	
	Chair(s): Hing Kai Chan	

115-0143 Digital twins for supply chain management: Functionalities, benefits and barriers

Christoph Schmidt, Post Doc/Researcher, Eth Zurich, Switzerland

Maximilian Klöckner, Post Doc/Researcher, ETH Zurich, Switzerland

Stephan Wagner, Professor, ETH Zurich, Switzerland

Sara Calcagni, Manager, Eth Zurich, Switzerland

Digital twins are a virtual data-based representation of real-world entities and processes. Conducting qualitative interviews and a Delphi study, we identify the challenges and benefits of adopting digital twins in global complex and dynamic supply networks. Benefits relate to operational efficiency, risk management and supply chain visibility.

115-0533 Blockchain technology for global supply chain: A guide for academics and supply chain leaders

Rita Difrancesco, Assistant Professor, Spain, Spain

Purushottam Meena, Associate Professor, College of Charleston, United States

Gopal Kumar, Associate Professor, iim raipur, India

This paper builds a theoretical framework for blockchain-enhanced supply chain performance based on qualitative research using case studies analysis and secondary data. The framework provides how blockchain improves supply chain performance and presents the major drawbacks and barriers to blockchain implementation, which help evaluate its net benefits.

115-0941 How does Blockchain-Enabled Governance Configuration Enhance Operations Management Credibility?

Hua Song, Professor, Renmin University of China, China

Wenyi Liu, Student, Renmin University of China, China

kangkang yu, Associate Professor, renmin university of china, China

Blockchain was recognized as a new governance mechanism in the operations management. Based on governance theory, we adopt the multiple case method to explore when and why the blockchain governance can improve operations credibility. We also try to find the substitutive and complementary effect between it and traditional governance mechanism.

115-2017 Blockchain-enabled authentication platform for protecting intellectual property rights for digital assets

Hing Kai Chan, Professor, University of Nottingham Ningbo China, China

Tiantian Zhang, Associate Professor, University of Nottingham Ningbo China, China

Disruptive technology has grown rapidly in the last decade, but intellectual property (IP) infringement in the digital era also posed concerns. A blockchain-enabled platform solution is proposed to protect IP rights for digital assets and promote standardization of the process. The platform allows encryption, authentication, and transaction services.

Invited Session

95	Monday, 01:45 PM - 03:15 PM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Logistics Management	
	Chair(s): Ibrahim Capar Ali Dogru	

115-0008 Integrating Value Stream Mapping and Control Theory: A New Dynamic Supply Chain Model

Yogendra Singh, Student, University of Exeter, United Kingdom

Stephen Disney, Professor, University of Exeter, United Kingdom

Using value stream maps, we find there are three lead times in a single supply chain echelon: the customer, supplier, and production lead time. There are two replenishment policies; one determines production quantities, the other orders raw material. Our parsimonious model captures the dynamics of both make-to-stock and make-to-order systems.

115-0231 Logistics postponement to balance transportation, holding and service costs.

Ryan Tramp, Student, University of Alabama, United States

Monday, 01:45 PM - 03:15 PM

Nickolas Freeman, Associate Professor, University of Alabama Tuscaloosa, United States

In this paper, we explore the trade-off between order postponement and order tardiness under different costs, capacities, and orientations in a capacitated time space network using a modified service network design formulation. A simple heuristic is proposed to help reduce computational complexity.

115-0949 Joint Inventory and Pricing Optimization for Resale Firms

Emily Griffin, Assistant Professor, Babson College, United States

Burcu Keskin, Professor, University of Alabama Tuscaloosa, United States

Recent growth in e-commerce and sustainability has fueled demand for resale. Resale firms source used goods, where supply is uncertain and item quality varies, from consumers online. We model this unique context as a joint inventory and pricing problem. We investigate various policies under price and quality dependent demand.

115-1817 Improving Inbound Logistics Performance at Sawmills via a Timber Truck Notification Algorithm

Ali Dogru, Assistant Professor, University of Southern Mississippi, United States

Chao Meng, Assistant Professor, University of Southern Mississippi, United States

Queue times at sawmills are critical information for timber suppliers to make loading and scheduling decisions. We propose a simulation-based prediction model to estimate the current and future queuing times at sawmills. The proposed approach considers material handling activities at sawmills and timber trucks dispatched to destinations.

Invited Session

96	Monday, 01:45 PM - 03:15 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: External Sources of Innovation	
	Chair(s): Annapoornima Subramanian Vareska Van De Vrande	

115-0252 Absolute vs. Relative Search: Evidence from Performance Feedback on Organizational Innovative Search

Wei Yu, Assistant Professor, NUS, Singapore

Rob Nason, Associate Professor, McGill University, Canada

Yang Ye, Associate Professor, Southwestern University of Finance & Economics, China

Performance feedback literature connects organization-wide performance feedback to a single search area, but research recognizes that search is not conducted in isolation. We distinguish between absolute and relative perspectives of search, theorizing that performance feedback has contradictory effects on each. We test hypotheses using internal R&D and external technological transactions.

115-0305 Spend it wisely: Market and non-market strategies in the development of new drugs

Vareska Van De Vrande, Professor, Erasmus University Rotterdam, Netherlands

Annapoornima Subramanian, Associate Professor, National University of Singapore, Singapore

Moren Levesque, Professor, York University, Canada

Patricia Klopff, Assistant Professor, Rotterdam School of Management, Netherlands

Scholarly work suggests that signals sent through controversial non-market strategies like lobbying complement the signals sent through market strategies like building intellectual capital. We theoretically explain and empirically show that biopharmaceutical firms may challenge this view. Our results from a sample of 287 firms show the two strategies as substitutes.

115-0398 Public-Private and Private-Private Collaboration as Pathways for Socially Beneficial Innovation

Birgul Arslan, Assistant Professor, Erasmus University Rotterdam, Netherlands

Gurneeta Vasudeva, Associate Professor, University of Minnesota, United States

Elizabeth Hirsch, Associate Professor, University of Minnesota, United States

We examine the performance of public-private relative to private-private collaboration for innovation tasks addressing the global healthcare grand challenge of antimicrobial resistance. Collaboration risk, stemming from misaligned incentives and coordination problems, impairs the performance of public-private relative to private-private innovation tasks. This effect diminishes for projects with high technological uncertainty.

115-0438 Like whiskey: Does CVC unit performance get better with age?

Vareska Van De Vrande, Professor, Erasmus University Rotterdam, Netherlands

Annapoornima Subramanian, Associate Professor, National University of Singapore, Singapore

Moren Levesque, Professor, York University, Canada

In examining if young CVC units are subject to liability of newness, our formal decision theoretical model identifies CVC unit age to have a u-shaped relationship with its performance and CVC experience to amplify this relationship. Empirical analysis using CVC units founded between 2000 and 2014 confirms the hypothesized relationships.

Invited Session

97	Monday, 01:45 PM - 03:15 PM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Examining New Societal Problems	
	Chair(s): Shivam Gupta Goutham Takasi	

115-0084 When Should an OEM Service the Use of a Capital Intensive Product?

Yinshi (Agnes) Gao, Student, Penn State University University Park, United States

Monday, 01:45 PM - 03:15 PM

Saurabh Bansal, Associate Professor, Penn State University University Park, United States

Daniel Guide, Professor, Penn State University University Park, United States

The study focuses on a servicing firm that can provide leasing and purchasing options to multiple customer segments in a heterogenous market. We identify various market and product related factors that determine whether the firm should sell the product or servitize it.

115-0091 Not-for-Profit Operations: Incentivizing Effort by Restricting Resource Access

Goutham Takasi, Student, University of Texas at Dallas, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Harish Guda, Assistant Professor, Arizona State University, United States

We consider a not-for-profit setting where the principal (a not-for-profit organization) endows with two resources: high and base quality. We show that under some conditions, regardless of budget constraints restricting access to high-quality resources incentivizes the beneficiaries to increase their effort.

115-0206 Justice in Time: Evidence Based Operations Management Tools for Court Systems

Shany Azaria, Student, Tel Aviv University, Israel

Boaz Ronen, Emeritus Professor, Tel Aviv University, Israel

Noam Shamir, Assistant Professor, Tel Aviv University, Israel

In this manuscript we report on the adaptation of several operations management tools to the judicial system, and their role in alleviating court congestion. The analysis and the intervention were based on Theory of Constraints. A before-after econometric analysis was executed to evaluate the effect of these operational changes.

115-2149 Allocation of Funds in Bilevel Subsidy Welfare Programs

Wei Wei, Student, University of Massachusetts Amherst, United States

Priyank Arora, Assistant Professor, University of South Carolina, United States

Senay Solak, Professor, University of Massachusetts Amherst, United States

We study allocation of available and expected additional funds by a funding agency among various service agencies within bilevel, one-to-many, and service-focused subsidy welfare programs. We compare the resulting social impact when funding agency has versus has no equity consideration while aiming to generate a greater overall social impact.

Monday, 04:30 PM - 06:00 PM

Invited Session

100

Monday, 04:30 PM - 06:00 PM, Celebration 1

Track: Retail Operations

Invited Session: Issues in platform retailing

Chair(s): Aditya Jain

115-0330 The Role of Product Quality in Marketplaces

Leela Nageswaran, Assistant Professor, University of Washington, United States

Aditya Jain, Associate Professor, Baruch College, United States

Haresh Gurnani, Professor, Wake Forest University, United States

We study which mode of operation - marketplace, wholesale, or a combination - will prevail when the product quality is uncertain. In contrast to marketplace's dominance when quality is certain, we show that there may be a separating equilibrium wherein only a low-quality product is offered via marketplace.

115-0725 Omni-Channel Fulfillment Models

Bahriye Cesaret, Assistant Professor, Ozyegin University, Turkey

Armagan Bayram, Assistant Professor, University of Michigan-Dearborn, United States

We consider two omni-channel implementations: ship-from-store and home-delivery, by considering customer switching behavior across the channels. Ship-from-store allows retailers to fulfill online orders from stores and FCs. Home-delivery allows customers to receive orders placed in store at home. We build a dynamic programming framework to investigate fulfillment decisions.

115-0857 Pricing and Stocking Planning: Official vs. Third-Party Channels

Ning Ma, Student, Arizona State University, United States

Yimin Wang, Associate Professor, Arizona State University Tempe, United States

Rui Yin, Associate Professor, Arizona State University Tempe, United States

Many manufacturers operate official websites as well as contract with a third-party marketplace like Amazon. We study how such manufacturers should make production, allocation, and price decisions. We propose two production and allocation strategies and two pricing strategies to catch heterogeneous consumers, endogenous demands, and asymmetric competition.

115-1753 Pricing and Inventory Management When Consumers' Emotions Run High

Ozalp Ozer, Professor, University of Texas Dallas, United States

Arun Kumar Rout, Student, UT Dallas, United States

A. Serdar Simsek, Associate Professor, University of Texas Dallas, United States

We investigate the impact of consumers' anticipated disappointment-elation and regret-rejoice on demand of products with uncertain consumers' valuation. We show that consumers' disappointment and regret aversion decrease product demand. We also show that firms' optimal pricing and quantity for such products decrease as consumers' aversion to disappointment and regret increase.

Invited Session

101

Monday, 04:30 PM - 06:00 PM, Celebration 2

Track: Behavioral Operations Management

Invited Session: Implications of Behavioral Studies

Chair(s): Lei Hua

115-0170 Behavioral Issues in Sustainable Supply Chain Management—A Systematic Literature Review

Anna Land, Assistant Professor, Boise State University, United States

Rüdiger Hahn, Professor, Heinrich-Heine-University Düsseldorf, Germany

Regina Hahn, Professor, Hochschule Niederrhein, Germany

Thomas Gattiker, Professor, Boise State University, United States

Individual behavior is often considered a key enabler of SSCM. Understanding behavior at the micro-level of organizations will ultimately enable SSCM to better design and improve processes and performance at the macro-level. We conduct a systematic literature review to understand factors considered by the SSCM literature analyzing behavioral issues.

115-0325 Information Seeking Behavior in Procurement Processes

Somaye Nargesi, Assistant Professor, Pacific Lutheran University, United States

Kay Yut Chen, Professor, University of Texas Arlington, United States

We strive to investigate the information seeking biases in Supplier Selection problem. We designed a set of experiments to model participant's capability of recognizing relevant information and optimizing the value of it in the presence of irrelevant information

115-1073 Mechanism Design for Right-to-sell Contract under Retailer Competition: Theory and Experiment

Lei Hua, Assistant Professor, University of Texas At Tyler, United States

Kay Yut Chen, Professor, University of Texas Arlington, United States

Yan Wu, Associate Professor, San Jose State University, United States

This paper studies a sales problem with one supplier and multiple potential retailers who hold private information on their own inventory holding cost and compete for the right of contracting with the supplier. We theoretically and experimentally investigate multiple proposed mechanisms and uncover fruitful academic and managerial insights.

Monday, 04:30 PM - 06:00 PM

115-1538 Does Customer Digitalization Benefit Supply Partners? A Theoretical and Empirical Investigation

Lei Hua, Assistant Professor, University of Texas At Tyler, United States

Hui Liang, Assistant Professor, University of Texas At Tyler, United States

Xinyuan Shao, Student, University of Minnesota, United States

This paper studies the impact of customer digitalization on supply partners' financial performance using both game-theoretic and empirical analyses. We find that suppliers can benefit from customer digitalization if customer digitalization does not heavily undermine suppliers' bargaining power. Overall, our paper offers fruitful managerial implications for supply chain digitalization.

Contributed Session

102

Monday, 04:30 PM - 06:00 PM, Celebration 3

Track: Healthcare Operations Management

Contributed Session: Healthcare Operations for COVID-19

Chair(s): Eyyub Kibis

115-0982 The Impact of Public "Word-of-Mouth" on the Prescription Practice during the COVID-19 Pandemic

Lakshminarayana Nittala, Assistant Professor, University of Dayton, United States

Sezgin Ayabakan, Assistant Professor, Temple University, United States

Subodha Kumar, Professor, Temple University, United States

Dileep Unnikrishnan, Technical Lead, Data Science and Analytics, Cloudphysician, India

Dileep Raman, Co-Founder and Chief of Health Care, Cloudphysician, India

In this work, we show that, in the context of a healthcare disaster, presence of uncertainty regarding effective therapeutic treatments can lead to the propagation of social media word-of-mouth narratives that can be detrimental to decision making by physicians. Implications for healthcare disaster management and practitioners in general are discussed.

115-1063 Evaluating the Patient Access Block and Waiting Time during Omicron Surge in Hong Kong

Qihao WU, Student, The University of Hong Kong, Hong Kong, China

Yong-Hong Kuo, Assistant Professor, The University of Hong Kong, Hong Kong, China

Because of the patient surge during pandemic, severe cases of hospital access block from emergency departments to inpatient wards were reported. This situation led to healthcare operations challenges, such as long waiting times and overcrowding. We conducted time-series predictions to identify the importance of medical occupancy and admitting elderly patients.

115-1822 Hospital utilizations during Covid 19 pandemic: An efficiency problem

Eyyub Kibis, Assistant Professor, Montclair State University, United States

Musa Caglar, Professor, Tulane University, United States

Serhat Simsek, Assistant Professor, Montclair State University, United States

Subodha Kumar, Professor, Temple University, United States

Due to the failure of government policies or unsuccessful implementation of preventative measures, Covid 19 outbreak was uncontrollable in the initial phases. This created a significant burden on the healthcare system of the nation. We came up with an optimization model to provide efficient hospital utilization for outbreak control.

Contributed Session

103

Monday, 04:30 PM - 06:00 PM, Celebration 4

Track: Healthcare Operations Management

Contributed Session: Hospital Operations Management

Chair(s): Surya Pathak

115-0948 Effect of tele-interviews on medical residency recruiting process

Edieal Pinker, Professor, Yale University, United States

Abraham Seidmann, Professor, Boston University, United States

Vera Tilson, Associate Professor, University of Rochester, United States

During and post-COVID many US medical residency programs turned to virtual interviews, decreasing the cost of the interviewing process for applicants. This digitization resulted in a significant increase in unfilled residency positions. We create a queueing model of the recruiting process to explain this unexpected outcome.

115-1383 Hospital-physician Integration and Cardiac Surgery Outcomes: A U-shaped Relationship?

Hui Jia, Assistant Professor, University of La Verne, United States

Haileab Hilafu, Associate Professor, University of Tennessee Knoxville, United States

Bogdan Bichescu, Associate Professor, University of Tennessee Knoxville, United States

This study adopts an activity-based measure of hospital and physician integration (ABI) to investigate the association between integration and healthcare outcomes. We utilize patient-visit level information to test hypotheses that posit a U-shaped association between ABI and patient mortality risk, readmission risk and length of stay for CABG patients.

115-1694 Do You Have A Minute? Interrupting Nurses at Workplace and The Implications on Performance

Sophie Leroy, Professor, University of Washington Bothell, United States

Surya Pathak, Professor, University of Washington: Bothell, United States

Monday, 04:30 PM - 06:00 PM

One of the key challenges faced by nurses is the “interruption” during normal operation. Interruptions alter process flows leading to stressful work environment and productivity loss. We investigate the impact of six different classes of interruptions within hospital settings on both individual and organizational level performance.

Invited Session

104	Monday, 04:30 PM - 06:00 PM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Empirical Modelling and Analytics in Enhancing the Delivery of Healthcare	
	Chair(s): Saeede eftekhari	

115-0181 Care for the Mind Amid Chronic Diseases: An Interpretable AI Approach Using IoT

Jiaheng Xie, Assistant Professor, University of Delaware, United States
Xiaohang Zhao, Assistant Professor, Shanghai University of Economics and Finance, China
Xiang Liu, Student, University of Delaware, United States
Xiao Fang, Professor, University of Delaware, United States

Health sensing for chronic disease management creates immense benefits for social welfare. Existing health sensing studies primarily focus on the prediction of physical chronic diseases. Depression, a widespread complication of chronic diseases, is however understudied. We draw on the medical literature to support depression prediction using motion sensor data.

115-0213 How Does Physician's Adoption of Audio Communication in Online Healthcare Platform Affect Interactions with Patients?

Xunyu Chen, Senior Lecturer, University of Arizona, United States
Yeongin Kim, Assistant Professor, Virginia Commonwealth University, United States
Seokjun Youn, Assistant Professor, University of Arizona, United States

Recently, many online healthcare platforms (OHPs) have added multimodal communication channels (e.g., text, voice) to facilitate physician-patient interaction. This quasi-natural experiment examines how the doctor's use of voice messages, in addition to text messages, affects patient emotional/informational support and doctor social/economic returns.

115-1294 Health Information Exchanges and Continuity of Care

Saeede eftekhari, Assistant Professor, Tulane University, United States
Ram Ramesh, Professor, State University of New York, United States

After a patient is referred to a specialist by a Primary Care Physician (PCP), it is critical to maintain the continuity of care by returning patients to PCPs. In this research, we show that Health Information Exchanges (HIEs) have the potential to speed up the return of patients.

115-1551 Improving efficiency and effectiveness in rehabilitation services

Rajesh Srivastava, Professor, Florida Gulf Coast University, United States
Elias Kirche, Associate Professor, Florida Gulf Coast University, United States
Yong-Taek Min, Assistant Professor, Florida Gulf Coast University, United States

We examine the factors and conditions that affect patient outcomes in rehabilitation services at acute care facilities to predict patient discharge destinations and length of stay. We analyze electronic health records with patient individual characteristics and mobility measures to improve allocation of staff and resources with data mining approach.

Invited Session

105	Monday, 04:30 PM - 06:00 PM, Celebration 6	Track: POM-Finance Interface
	Invited Session: Retail Applications in OM-Finance Interface	
	Chair(s): Aadhaar Chaturvedi	

115-0743 The Value of Co-branded Credit Cards in Online Retailing: Empirical Evidence from HKTVmall

Huijun Chen, Student, Hong Kong University of Science and Technology, Hong Kong, China
Kristiaan Helsen, Associate Professor, Hong Kong University of Science and Technology, Hong Kong, China
Haoyu Liu, Assistant Professor, City University of Macau, Macao, China

How do co-branded credit cards affect consumer behavior in online retailing? We investigate this problem by leveraging a quasi-experiment involving the issue of a co-branded credit card by Citibank and HKTVmall. We perform difference-in-differences analysis with matching. We show that the co-branded credit card increases consumers' ordering frequency and size

115-1351 Adverse Selection and Information Signals in Peer-to-peer Lending Markets

Peng-Chu Chen, Assistant Professor, The University of Hong Kong, Hong Kong, China
Ran Tao, Student, The University of Hong Kong, Hong Kong, China

We study credit risk in a peer-to-peer lending market where operators require different types of information from borrowers to mitigate the effects of adverse selection. We show that soft information increases loan matching and credit risk; while hard information reduces both. Requiring both types of information can strike a balance.

115-2100 Disclosure of Private Label Producers: Impact on Retail Operations and Consumer Welfare

Alexander Maslov, Post Doc/Researcher, Vanderbilt University, United States

Monday, 04:30 PM - 06:00 PM

The paper studies the disclosure effect of private label producers on retail operations and consumer welfare. I show that conditional on whether the disclosure impacts the perceived quality of the private label itself, the same-category national label or both labels, there may be gains or losses for all supply-chain parties.

Invited Session

106	Monday, 04:30 PM - 06:00 PM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: Emerging Topics in Sustainable Operations	
	Chair(s): Ioannis Bellos Hang Ren	

115-0199 The Role of Dealer Demonstration in the Adoption of Electric Vehicles

Hang Ren, Assistant Professor, George Mason University, United States
Ioannis Bellos, Associate Professor, George Mason University, United States
Vishal Agrawal, Associate Professor, Georgetown University, United States

An important reason for customers' hesitation to adopt electric vehicles is that they are unsure about the achievable range as it depends on driving conditions realized post-purchase. To address it, car dealers can offer demonstration services. We study a dealer's optimal demonstration strategy and its environmental impact.

115-0214 Economic and Environmental Implications of Ridehailing and the Vehicle Age Limit Requirements

Natalie (Ximin) Huang, Assistant Professor, University of Minnesota, United States
Ioannis Bellos, Associate Professor, George Mason University, United States
Vishal Agrawal, Associate Professor, Georgetown University, United States

We study an important decision for ridehailing platforms, namely, imposing a vehicle age limit. The limit influences not only the price and service quality of ridehailing, but also its competition with the primary and secondary car sales markets. We explore both the economic and environmental implications of this decision.

115-0991 Circular economy of EV batteries: Economic and environmental impacts of repurposing

Lingling shi, Post Doc/Researcher, Southern Methodist University, United States
Metin Cakanyildirim, Professor, University of Texas Dallas, United States
Sila Cetinkaya, Professor, Southern Methodist University, United States

The fast growth of electric vehicle (EV) market and the increased energy storage market stimulate the demand for batteries and in turn the critical minerals, which face high supply uncertainty. We investigate the economic and environmental impacts of repurposing spent EV batteries for energy storage in addition to recycling.

115-1856 Optimal Design of Extended Producer Responsibility Regulation for Emerging Industries

guiyun feng, Assistant Professor, Singapore Management University, Singapore
Natalie (Ximin) Huang, Assistant Professor, University of Minnesota, United States
Yangfang (Helen) Zhou, Associate Professor, Singapore Management University, Singapore
Bin Li, Assistant Professor, Wuhan University, China

We study the optimal timing decision of EPR regulation, which is an important lever especially for emerging industries (e.g., EVs). In those cases, delaying the regulation may allow the industries to advance further along the learning curve. Our study provides useful insight on the optimal design of EPR regulation.

Contributed Session

107	Monday, 04:30 PM - 06:00 PM, Celebration 8	Track: Sustainable Operations Management
	Contributed Session: Closed Loop Supply Chain Management (II)	
	Chair(s): Hamed Farrokhiasl	

115-1594 Post disaster climate change perceptions in SW Florida

Hulya Yazici, Professor, Florida Gulf Coast University, United States

Climate change is getting acceptance by larger communities. Disaster experience plays a role in the perceptions of climate change (Li, Cao and Shi, 2022). This study reports the results of climate change perceptions of college students after Hurricane Ian. Results are compared to Yale Climate Opinion Map 2021 findings.

115-1606 Study and analysis of circular economy practices in Morocco: Evidence from Agro-industry

Tarik Zouadi, Associate Professor, International University of Rabat, Morocco
Zakaria El Hathat, Student, International University of Rabat, Morocco
Raja Sreedharan, Senior Lecturer, CARDIFF METROPOLITAN UNIVERSITY, United Kingdom

As the world has become more conscious of sustainable business operations, industries are pushing to adopt circular economy practices to enhance their supply chains. This work addresses the Moroccan Agro-industry to analyze how olives are recycled and how secondary raw materials are extracted to make fuel and cosmetic products.

115-1902 A new approach to deal with construction and demolition waste

Hamed Farrokhiasl, Student, University of Wisconsin - Milwaukee, United States
Xiaohang Yue, Associate Professor, University of Wisconsin - Milwaukee, United States

Monday, 04:30 PM - 06:00 PM

This research presents a bi-objective multi-period location routing model for construction and demolition waste management. We aim to integrate a multi-attribute decision-making tools with the optimization mathematical model to specify the suitable location of integrated recycling/disposal facilities considering various disposal technologies like landfill, burning, and composting.

115-1960 Crisis of Plastic: Business Implications from Data Analytics

Nesreen El-Rayes, Student, New Jersey Inst of Technology, United States

Aichih Chang, Assistant Professor, New Jersey Institute of Technology, United States

Jim (Junmin) Shi, Associate Professor, New Jersey Inst of Technology, United States

This study sheds light on the prevailing plastic crisis with insights derived from the analysis of plastic consumption by applying machine learning and visualizations on real-world data through three lenses:(1) a global-level view, (2) State level view in the United States, and (3) industry-level view in the United States.

Invited Session

108	Monday, 04:30 PM - 06:00 PM, Celebration 9	Track: Supply Chain Management
	Invited Session: Recent Advances in Supply Chain Management	
	Chair(s): Zhichao Feng	

115-0152 Fast Rates for Contextual Linear Optimization

Yichun Hu, Student, Cornell University, United States

Xiaojie Mao, Assistant Professor, Tsinghua University, China

Nathan Kallus, Assistant Professor, Cornell University, United States

We study a linear optimization problem where coefficients are uncertain and need to be estimated from contextual/covariates information. We theoretically analyze a standard estimate-then-optimize approach and recent new approaches that integrates estimation and optimization. Our analyses reveal when the simpler estimate-then-optimize approach can outperform the sophisticated integrated approaches.

115-0477 Multi-product Dynamic Upgrades

Justin Goodson, Associate Professor, Saint Louis University, United States

Xiao Zhang, Assistant Professor, Saint Louis University, United States

Upgrades in travel industry are often static and offered either at the booking time or at the check-in time. In this paper, we study dynamically offered upgrades by a multi-product firm via notifications (e.g., emails) between the booking and the check-in times.

115-0525 Asymptotic optimality of projected inventory level policies for perishable inventory system with positive lead times

Jinzh Bu, Assistant Professor, The Hong Kong Polytechnic University, Hong Kong, China

Xiting Gong, Associate Professor, The Chinese University of Hong Kong, China

Huanyu Yin, Student, The Chinese University of Hong Kong, Hong Kong, China

We consider a periodic-review perishable inventory systems with positive lead times, where we propose a new class of projected inventory level (PIL) policies. Among others, we prove the best PIL policy is asymptotically optimal with large penalty costs under a class of demand distributions. Our numerical study demonstrates its effectiveness.

115-0543 M/M/s On Demand: Queues with On-Demand and Reserved Servers

Zhichao Feng, Assistant Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Anyan Qi, Assistant Professor, University of Texas Dallas, United States

We analyze a queueing system that employs both "reserved" and "on-demand" servers - the number of reserved servers is decided at the beginning of the time-horizon while that of on-demand servers is decided dynamically. The objective is to minimize the long-run average cost incurred in hiring servers and in waiting.

115-0854 UCB-Type Learning Algorithms with Kaplan-Meier Estimator for Lost-Sales Inventory Model with Lead Times

Chengyi Lyu, Student, University of Colorado Boulder, United States

Huanan Zhang, Assistant Professor, University of Colorado Boulder, United States

Linwei Xin, Associate Professor, University of Chicago, United States

In this paper, we consider a classic periodic-review lost-sales inventory system with lead times. We develop an Upper Confidence Boulder (UCB)-type learning framework and show it can be applied to the learning of not only the optimal base-stock policy, but also the optimal base-stock policy.

Invited Session

109	Monday, 04:30 PM - 06:00 PM, Celebration 10	Track: Supply Chain Management
	Invited Session: Recent Advances on Data-Driven Methods for Supply Chain Management	
	Chair(s): Meng Qi	

115-0219 AI vs. Human Buyers: A Study of Alibaba's Inventory Replenishment System

Jiaxi Liu, xxx, Alibaba Group, China

Shuyi Lin, xxx, Alibaba Group, China

Linwei Xin, Associate Professor, University of Chicago, United States

Monday, 04:30 PM - 06:00 PM

Yidong Zhang, xxx, Alibaba Group, China

Alibaba has been exploring a new algorithmic replenishment system. The algorithms combine state-of-the-art deep-reinforcement-learning techniques with the framework of fictitious play. We present evidence algorithms outperform human-buyers. We have also observed panic buying from human-buyers during lockdowns in China amid the pandemic, whereas panic buying can be mitigated under algorithms.

115-0448 Network Revenue Management with ℓ_1 Nonparametric Demand Learning: ℓ_2 -regret and Polynomial Dimension Dependency

Sentao Miao, Assistant Professor, McGill University, Canada

Yining Wang, Assistant Professor, University of Florida, United States

This paper studies the classic price-based network revenue management (NRM) problem with non-parametric demand learning. We propose a robust ellipsoid method adapted to the NRM setting in a non-trivial manner, and this algorithm achieves the desired low regret, which has been an open problem.

Invited Session

110	Monday, 04:30 PM - 06:00 PM, Celebration 11	Track: Social Media and Web 2.0
	Invited Session: Social Media and UGC	
	Chair(s): Qili Wang	

115-0126 Cryptocurrency Market Reaction to Twitter Sentiment: An Event Study

Tong Shen, Student, University of Connecticut, United States

Whether the pattern of how social media affects the stock market applies to the cryptocurrency market is still unclear. In this paper, we study the cryptocurrency market reaction to celebrities' tweets over one year using the event study methodology.

115-0150 How Ad-Sponsored Strategy Affects Content Creation: Empirical Evidence from a Web Novel Platform

Kaiyu Zhang, Student, University of Connecticut, United States

Qili Wang, Student, University of Florida, United States

Liangfei Qiu, Associate Professor, University of Florida, United States

The web novel economy has been taking a pay-per-view model for business. However, some web novel platforms introduced ad-sponsored models to attract readers by providing free content. Our study leverages a policy change to empirically investigate the impact of adopting ad-sponsored strategies on writers' content creation.

115-0179 Information Transparency and Market Efficiency in Blockchain-enabled Marketplaces: Role of Traders' Analytical Ability

Hong Zhang, Student, University of Texas Dallas, United States

Eric Zheng, Professor, University of Texas Dallas, United States

Amit Mehra, Professor, University of Texas Dallas, United States

In this paper, we surprisingly observe substantial market inefficiencies in a blockchain-enabled marketplace where full transparency is accomplished via blockchain, and to explain this paradox that inefficiencies persist even in a fully transparent environment, we argue that it is the limited analytical ability of traders that ultimately drives market inefficiencies.

115-0265 Stimulating Intrinsic Motivation of Human Annotators for AI Fairness

Yizhi Liu, Student, University of Maryland - College Park, United States

Siva Viswanathan, Professor, University of Maryland, United States

Human annotators are one pillar of the rapid growth of artificial intelligence (AI) but also a source of racial bias. We conducted field experiments to examine the effectiveness of financial incentives, moral suasion, learner autonomy, and their interactions on reducing the racial bias of human annotators and AI models.

Invited Session

111	Monday, 04:30 PM - 06:00 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Behavioral Elements and Humanitarian Operations Management	
	Chair(s): Mahyar Eftekhari	

115-0114 Workforce Configuration in Charity Setting

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

Joline Uichanco, Associate Professor, University of Michigan, United States

Chao Wu, Student, Arizona State University, United States

We study a problem of workforce management in charity settings, and develop an optimization model to enhance the volunteer group configuration under a random volunteer turnout. Our model incorporates the heterogeneity of volunteers, balances understaffing and overstaffing costs, and explicitly connects individuals' time and monetary donation.

115-0371 Does Volunteering Crowd Out Donations? Evidence from Online Experiments

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

Chao Wu, Student, Arizona State University, United States

Charities are cautioned against providing volunteer opportunities to potential donors because volunteers are considered as unreliable source of labor supply, and volunteering is assumed to crowd out monetary donation. In this study, we examine the causal relationship between individuals' volunteering and their subsequent donation decisions through two sets of experiments.

Monday, 04:30 PM - 06:00 PM

115-1490 Pushing the Limits: changing organizational structures in IFRC's humanitarian response operations.

Lauren Bateman, Student, George Washington University, United States

Erica Gralla, Associate Professor, George Washington University, United States

International humanitarian response uses a modular sectoral structure to organize operations in most types of disasters. We are now seeing that, in certain novel disasters, that structure is being changed. Using case studies, this work seeks to understand when the traditional structure may need to be changed, and why.

115-1621 Crowdfunding nonprofits: the focused charity evaluators' model

Gemma Berenguer, Assistant Professor, Universidad Carlos III de Madrid, Spain

Dashi Singham, Associate Professor, Naval Postgraduate School, United States

We study the nonprofit crowdfunding market from the perspective of a crowdfunding platform that recommends a small number of nonprofit organizations (NPOs). We study the optimal menu of NPOs that the platform should recommend while taking into account the donors' preferences and the platform's objective to maximize total utility.

Contributed Session

112

Monday, 04:30 PM - 06:00 PM, Celebration 13

Track: Teaching/Pedagogy in POM

Contributed Session: **Workshop: Emergency! The ED Operations Simulation Game**

Chair(s): Craig Froehle

115-0017 Emergency! The ED Operations Simulation Game

Craig Froehle, Professor, University of Cincinnati, United States

This session is a hands-on demonstration of Emergency!, a cooperative, educational simulation game based on an actual Emergency Department. It helps students understand operations concepts like how variability influences service performance, flexibility's role in managing service capacity, and the value of shifting capacity in response to changes in demand.

Invited Session

113

Monday, 04:30 PM - 06:00 PM, Celebration 14

Track: Service Operations

Invited Session: **Designing and operating on-demand service platforms**

Chair(s): Felix Papier

115-0427 Online Retailing with Authentication: Honesty, Distinguishability and Misauthentication

Baolong Liu, Assistant Professor, ShanghaiTech University, China

Yanlu Zhao, Assistant Professor, Durham University, United Kingdom

We investigate platforms that first authenticate sellers' products and fulfill orders if the products are authentic. Authentication helps consumers avoid counterfeits, but it's costly, time-consuming, and possibly inaccurate. We develop Bayesian queueing models to characterize seller-authenticator collaborative decisions considering consumers' distinguishability and conclude authentication might hurt consumers with threshold manners.

115-0436 The Impact of Automation on Workers when Workers are Strategic: The Case of Ride-hailing

Saif Benjaafar, Professor, University of Minnesota, United States

Zicheng Wang, Post Doc/Researcher, University of Minnesota, United States

Xiaotang Yang, Student, University of Minnesota, United States

We study the impact of automation on worker welfare when workers are strategic. We ground our analysis in the setting of a ride-hailing service that operates a mixed fleet with human drivers and autonomous vehicles. We show that the introduction of automation can improve both efficiency and worker welfare.

115-0569 Electric Vehicle Capacity Planning

Francisco Castro, Assistant Professor, Anderson School of Management, United States

We consider a platform that operates a fleet of electric vehicles. We analyze the number of vehicles and charging stations required to serve all the demand. Fewer chargers imply a larger fleet, however, under optimal dispatch, the platform uses charging vehicles to effectively reduce an otherwise too-large fleet.

115-0851 Market Thickness in Online Food Delivery Platforms: The Impact of Food Processing Times

Yanlu Zhao, Assistant Professor, Durham University, United Kingdom

Felix Papier, Professor, ESSEC Business School, France

Chung-Piaw Teo, Professor, National University of Singapore, Singapore

We study matching drivers with orders in online food delivery platforms and develop algorithms that use uncertain food processing times to 'delay' the matching. We derive structural properties and use a real dataset to show that our policy leads to 43% less costs and 27% less idling at restaurants.

Monday, 04:30 PM - 06:00 PM

Invited Session

114

Monday, 04:30 PM - 06:00 PM, Celebration 15

Track: Information Systems and Operations Management

Invited Session: Social Platforms

Chair(s): Aslan Lotfi

115-0241 Measuring the Influence of Multichannel Digital Advertising: A Fractional Calculus-Based Approach

Aslan Lotfi, Assistant Professor, University of Richmond, United States

Xinxue Qu, Assistant Professor, University of Notre Dame, United States

Zhengrui Jiang, Professor, Nanjing University, China

We introduce a new adstock model in which we use fractional calculus to account for adstock decline that occurs due to memory decay over time. Our results show that the new model more effectively determines the influence of advertising exposures through different digital channels than does a widely-used benchmark model.

115-1228 How do firms design and leverage Twitter activities to improve operational performance?

Ana Castillo, Assistant Professor, University of Granada, Spain

Laura Ruiz, Assistant Professor, NEOMA Business School, France

Jose Benitez, Professor, Edhec Business School, Spain

Ashish Jha, Associate Professor, Trinity College Dublin, Ireland

Using a sample of 225 companies and secondary data, this research investigates whether the customers' social media behavior affects the firm's initiatives on social media and the impact of firms' social media initiatives on firms' operational performance. We focus on Twitter activities. Preliminary results support our theory.

115-1639 Content Co-Production and the Influence on Follower Growth

Xinxue Qu, Assistant Professor, University of Notre Dame, United States

Sophie Zhai, Assistant Professor, University of Oklahoma, United States

This study investigates an important phenomenon of social media content development - co-production among social influencers. Building on the literature on social media strategy and team collaboration, we examine whether co-production content can benefit team members regarding follower growth and which influencer(s) can benefit the most.

115-1660 Hosting and Promoting Extremism: Identifying White Nationalist Mobilizations on Social Media Platforms

Jonathan Gomez Martinez, Student, Emory University, United States

Ramnath Chellappa, Associate Professor, Emory University, United States

Domestic extremism is a growing threat in the United States and social media platforms are credited with promoting related content. In this work, we identify online trends which precede white nationalist mobilizations. We compare user interactions on Twitter and Parler as well as consider interactions between the platforms.

Invited Session

115

Monday, 04:30 PM - 06:00 PM, Coral Spring 1

Track: Emerging Topics in Operations Management

Invited Session: Sustainability Across Firms and Industry Boundaries

Chair(s): Dwaipayan Roy

115-0065 Decision Reversal Among Small and Medium Sustainable Suppliers: A Behavioral Investigation

Shalique Sidhikh, Assistant Professor, Indian Institute of Management, Bangalore, India

Sidhartha Padhi, Professor, Indian Institute of Management Kozhikode, India

Nagesh Murthy, Professor, University of Oregon, United States

In this study, we address a hitherto unexplored but serious issue of decision reversals among small and medium-sized sustainable suppliers in the lower tiers of the supply chain. We test the effect of myopic loss aversion and reference thinking using vignette-based experiments among sustainable food suppliers in South India.

115-0083 Competitive Sustainable Agricultural Supply Chain Network Model with Environmental and Social Sustainability Considerations

Deniz Besik, Assistant Professor, University of Richmond, United States

Sara Saberi, Assistant Professor, Worcester Polytechnic Institute, United States

Pritha Dutta, Assistant Professor, Pace university, United States

Rodrigo Mercado Fernandez, Assistant Professor, Tecnologico De Monterrey, Mexico

This paper presents a competitive, multiperiod and multicriteria agricultural supply chain network model that captures all three aspects of sustainability: financial, environmental, and social, which is the Triple Bottom Line. The agri-food firms compete for farmland and labor as well as to sell their agricultural products at demand markets.

115-0194 Hiding Behind Complexity: Supply Chain, Oversight, Race, and the Opioid Crisis

Iman Attari, Student, Indiana University Bloomington, United States

Jonathan Helm, Associate Professor, Kelley School of Business, United States

Jorge Mejia, Associate Professor, Indiana University, United States

Monday, 04:30 PM - 06:00 PM

In this study, we show that complexity of prescription opioid supply chains allowed mass quantities of opioids to escape detection by the DEA. Further, we find new evidence showing the greater impact of complexity on dispensing in non-white communities that are usually excluded from government's response to the opioid crisis.

115-0922 The Impact of Food Delivery Platforms on Small-Business Restaurants: Implications for Commission Rates and Legislations

Hailong Cui, Assistant Professor, University of Minnesota, United States

Rui Niu, Software Enginner, Amazon.com, United States

Xin Tong, Assistant Professor, University of Southern California, United States

We empirically study the impact of online food delivery platforms on small-business restaurants in California. We collect unique panel data sets and use econometric and machine learning methods to research the implications of platform's commission rates and listing menus of restaurants without explicit contracts.

Contributed Session

Monday, 04:30 PM - 06:00 PM, Coral Spring 2

Track: Emerging Topics in Operations Management

Contributed Session: Platforms

Chair(s): Siyu Du

115-0237 Capacity Sharing for Ride-Sourcing Platforms under Competition

Xiaonan Li, Student, Tongji University, China

Xiangyong Li, Professor, Tongji University, China

Motivated by concern for different stakeholders' welfare under capacity sharing strategies, we examine platform competition in a ride-sourcing market context where platforms play a Cournot competition. For each considered capacity settings, we examine the implications of the constrained capacity and capacity sharing on platforms, passengers, drivers, and society.

115-1160 The Optimal Content Provision Strategy for a Streaming Platform: Pure Agency, Self-production or Collaboration

Jie Wu, Professor, School of Management, China

Siyu Du, Student, University of Science and Technology of China, China

Xiang Ji, Associate Professor, University of Science and Technology of China, China

Mingjun Li, Post Doc/Researcher, University of Science and Technology of China, China

This research analyzes the optimal content provision strategy for a streaming platform. Our results indicate that as the effectiveness of the third-party (the platform) increases, it increasingly prefers the pure agency (self-production) strategy. When collaboration effectiveness increases, collaboration becomes the optimal strategy for the platform.

115-2042 Delivering parcels through smart mobile lockers under market expansion and competition

Si Liu, Student, McMaster University, Canada

Jiaao Zhang, Student, Macau University of Science and Technology, Macao, China

We study a new delivery technology and aim to maximize its revenue, which can be forecasted through a discrete customer choice model. We model the service point locating the problem of the system, which involves two stakeholders, a leader, the bus operator, and a follower, a start-up third-party platform.

115-2140 Artificial Intelligence Application in times of crisis: a real-world case study of an emerging country

Guilherme Vidal, Student, Pontificia Universidade Católica do Rio de Janeiro - PUC-Rio, Brazil

This study proposes a novel data-driven MRO inventory management, combining time series clustering and artificial neural networks with genetic algorithms techniques. A mixed-method approach, with a real case study in an emerging economy, illustrates how Artificial Intelligence can contribute to OSCM resilience in times of crisis.

Contributed Session

Monday, 04:30 PM - 06:00 PM, Blue Spring 1

Track: Supply Chain Risk Management

Contributed Session: SC Disruptions

Chair(s): Laharish Guntuka

115-0220 Supply Disruption in Multi-Tier Supply Chains: Competition and Network Configuration

Hongfan Chen, Assistant Professor, Chinese Univ of Hong Kong, Hong Kong, China

Sean Zhou, Professor, Chinese Univ of Hong Kong, Hong Kong, China

Yixin ZHU, Student, Chinese University of Hong Kong, Hong Kong, China

We consider a three-tier supply chain network with two firms in each tier. One firm in the network is susceptible to disruption risk. we examine how the impact of disruption on the performance of both centralized and decentralized supply chains differs when the disruption/missing link occurs at different positions.

115-0301 SUPPLY CHAIN PLASTICITY POST DISRUPTIONS? WHAT IS IT AND WHY DOES(?) IT MATTER?

Laharish Guntuka, Assistant Professor, Rochester Institute of Technology, United States

Ellie Falcone, Assistant Professor, Oklahoma State University, United States

Steven Carnovale, Assistant Professor, Rochester Institute of Technology, United States

Monday, 04:30 PM - 06:00 PM

This study pursues two broad research questions, does supply chain plasticity exist? If so, why does it matter? First, we explored to what degree do a firm engage in plasticity after a disruption, captured as the change of firm structural holes, network centrality, and clustering. Second, we determined plasticity's implication.

115-0946 How does digital technology establish smart risk management system of supply chain finance?

Wenyi Liu, Student, Renmin University of China, China

We explore how the structured credit based on the supply chain operation can be integrated with the digital credit based on the operator portrait in supply chain finance to form intelligent credit, and conclude the processes including scene formation, asset penetration, fine management, early warning, information governance and digital reputation.

115-1330 Disruption and Rerouting in Supply Chain Networks

John Birge, Professor, University of Chicago, United States

Agostino Capponi, Associate Professor, Columbia University, United States

Peng-Chu Chen, Assistant Professor, The University of Hong Kong, Hong Kong, China

We study systemic risk in a supply chain network where firms can be hit by cost or demand shocks that propagate through the network. We show that, as long as firms have large initial equity buffers, network fragility is low if both buyer diversification and supplier diversification are low.

Invited Session

118	Monday, 04:30 PM - 06:00 PM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research on Retail Operations	
	Chair(s): Stanley Lim Jinjia HUANG	

115-0875 Local Fulfillment in E-Commerce: Structural Estimation of Fulfilling Demand Sensitive to Delivery Speed

Dayton Steele, Professor, University of Minnesota, United States

Saravanan Kesavan, Professor, University of North Carolina Chapel Hill, United States

Fulfilling orders in e-commerce through front distributions centers (DCs) closer to the customer improves delivery speed to drive increased sales but at increased inventory costs. In the context of JD.com, we build and estimate a structural model that captures this tradeoff.

115-0917 Economic and Operational Implications of Third-Party Delivery Platforms

Jinjia HUANG, Post Doc/Researcher, IORA, National University of Singapore, Singapore

Stanley Lim, Assistant Professor, Michigan State University, United States

M. Serkan Akturk, Assistant Professor, Clemson University, United States

We examine store- and department-level changes in the sales and inventory performance of a traditionally offline grocery chain from the entry of a third-party delivery platform. Leveraging a natural experiment design, our results suggest heterogenous effects across departments over several metrics after platform's entry. We explore implications on inventory management.

115-1283 Marketplace Expansion through Marquee Seller Adoption: Externalities and Quality Implications

Wenchang Zhang, Assistant Professor, Kelley School of Business, United States

Wedad Elmaghraby, Professor, Robert H. Smith School of Business, United States

Ashish Kabra, Assistant Professor, university of maryland, United States

In the race to establish themselves, many early-stage online marketplaces choose to accelerate their growth by adding marquee (established brand name) sellers. We study the implications of marquee seller entry on smaller, unbranded sellers in a marketplace when marquee sellers can vary across the quality of information/service they provide.

115-1934 The Resilience of Digital Goods: Evidence from Online Reading Consumption

Jin Liu, Student, University of Science and Technology of China, China

Lizheng Wang, Post Doc/Researcher, University of Science and Technology of China, China

Yongjun Li, Associate Professor, University of Science and Technology of China, China

Junhong Chu, Professor, University of Hong Kong, Hong Kong, China

This study provides interesting empirical evidence on economic resilience of digital goods. Using a combination of COVID-19 epidemiological and consumer-level consumption data, we found that digital goods resilience was associated with a per capita increase of 17.98 Chinese yuan (CNY) in consumption. Furthermore, we uncover some of the underlying mechanisms.

Invited Session

119	Monday, 04:30 PM - 06:00 PM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research in Emerging Topics of Logistics and Operations Management	
	Chair(s): Sukrit Pal	

115-0411 Patient Outcomes as Influenced by Clinical Focus and the Timing of Healthcare Decisions

Aman Goswami, Student, Rutgers Business School, United States

Xin Ding, Assistant Professor, Rutgers Business School, United States

David Dreyfus, Assistant Professor, Rutgers Business School, United States

Monday, 04:30 PM - 06:00 PM

Leveraging patient-level data from Nationwide Inpatient Sample, our research examines how clinical focus and time to procedure influence patient outcomes like length of stay. Our results validate critical hypotheses linking patient outcomes to both the timing of healthcare decisions and the degree of specialization at different levels within a hospital.

115-0619 Location and Environmental Biases of Procurement Professionals in Sourcing Decisions

Dustin Cole, Assistant Professor, Auburn University, United States
Sriram Narayanan, Professor, Michigan State University, United States
Tobias Schoenherr, Professor, Michigan State University, United States
Charles Corbett, Professor, UCLA Anderson School of Management, United States

This research uses a vignette experiment administered to procurement professional to examine how competing environmental and supplier location decisions are balanced in sourcing decisions. We find a preference for local suppliers with lower carbon emissions to the point where a supplier with a better overall environmental profile will be ignored.

115-1562 Evaluating hospital operations and patient access in response to Certificate of Need application outcomes

Jonathan Phares, Assistant Professor, Iowa State University, United States

Certificate of Need (CON) should drive hospital utilization by ensuring hospital capacity is located where it is needed most. We analyze publicly available data to evaluate hospital utilization, competition, and patient access in markets following approvals and denials of CON applications.

115-1608 Assessing Crowdsourced Delivery Drivers' Intent to Continue Working with Your App

Michael Dwyer, Student, Iowa State University, United States
Robert Overstreet, Assistant Professor, Iowa State University, United States
William Rose, Assistant Professor, Iowa State University, United States

Companies interested in alternative last-mile logistics solutions often employ crowdsourcing. This research will examine delivery drivers' perceptions of crowdsourcing applications' electronic monitoring and algorithmic management. Drivers may alleviate cognitive dissonance related to monitoring and management practices through negative word-of-mouth, which may affect their intent to continue working with an application.

Invited Session

120	Monday, 04:30 PM - 06:00 PM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Panel: New Textbooks in Production and Operations Management	
	Chair(s): Torbjørn Netland	

115-2063 Panel: New Textbooks in Production and Operations Management

Nada Sanders, Professor, Northeastern University, United States
F. Robert Jacobs, Emeritus Professor, Indiana University Bloomington, United States
Jay Heizer, Emeritus Professor, Ops Mgt, United States
Torbjørn Netland, Assistant Professor, ETH Zurich, Switzerland

Authors discuss their latest textbooks in production, operations, and supply chain management: Sander & Reid "Operations Management: An Integrated Approach;" Jacobs & Chase "Operations and Supply Chain Management;" Heizer & Render "Operations Management: Sustainability and Supply Chain Management;" Baudin & Netland "Introduction to Manufacturing: An Industrial Engineering and Management Perspective."

Invited Session

121	Monday, 04:30 PM - 06:00 PM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Online Platform Strategies	
	Chair(s): Baojun Jiang Jiaru Bai	

115-0068 Can Third-Party Sellers Benefit from a Platform's Entry to the Market?

Yiting Deng, Assistant Professor, University College London, United Kingdom
Christopher Tang, Professor, University of California Los Angeles, United States
Wei Wang, Associate Professor, University of International Business And Economics, China
Steve Yoo, Associate Professor, University College London, United Kingdom

It is a common belief that an e-commerce platform's market entry will be detrimental to third-party sellers selling similar products on the platform. Our empirical analysis shows the opposite. We develop a duopoly model that incorporates the changing competitive dynamic after platform entry to explain this unexpected exploratory result.

115-0161 Advertising Format and Content Provision on Revenue-Sharing Content Platforms

Baojun Jiang, Professor, Washington University St Louis, United States
Lin Tian, Associate Professor, Fudan University, China
Yuansheng Wei, Assistant Professor, Sun Yat-Sen University, China

This paper studies user content creation under different advertising formats on content platforms. We show that an increase in creator substitutability can increase the profits of the platform and the content creators and improve the consumer surplus.

115-1281 Mobile App Push Strategies on Customer Engagement

Jiaru Bai, Assistant Professor, Stony Brook University, United States
Qiang Gao, Assistant Professor, City University of New York, United States

Monday, 04:30 PM - 06:00 PM

Zhuping Liu, Assistant Professor, Baruch College, United States

Building on consumer behavioral theories, we hypothesize that mobile app push strategies should be based on consumers' spatial and temporal information. Leveraging unique large-scale consumer data on companies' push promotions and customers' responses from a mobile coupon platform, we calibrate a hidden Markov model to test and verify our conjectures.

115-1358 Is Kindness the Magical Spell? The Role of Information and Reciprocity in Revenue-sharing Crowdfunding

Guangwen Kong, Associate Professor, Temple University, United States

Behrooz Pourghannad, Assistant Professor, University of Oregon, United States

Laurens Debo, Professor, Dartmouth College, United States

We consider an entrepreneur funding his project from investors through a revenue-sharing crowdfunding campaign and provide guidelines for platforms and entrepreneurs on how to leverage the social network in a crowdfunding campaign.

Invited Session

122	Monday, 04:30 PM - 06:00 PM, Barrel Spring 2	Track: POM-Marketing Interface
	Invited Session: Consumer Behavior and Firm Decisions	
	Chair(s): Lifei Sheng Lai Wei	

115-0314 Managing the Opioid Crisis: Supply Chain Response to Anomalous Buyer Behavior

Annie Shi, Student, Washington University in St. Louis, United States

Seethu Seetharaman, Professor, Washington University in St. Louis, United States

Michael Wall, Lecturer, Washington University in St. Louis, United States

Anthony Sardella, Lecturer, Washington University in St. Louis, United States

Chenthuran Abeyakaran, Student, Washington University in St. Louis, United States

In this study, we provide a supply-chain perspective to manage the ongoing opioid crisis. Using the ARCOS database, we employ a novel anomaly detection algorithm to detect suspicious buyer activity. Our anomaly detection algorithm, replying upon only 5 variables, yields a precision of 100% and a sensitivity of 46%.

115-1090 Does Racial Diversity increase Advertising Effectiveness: Evidence from the Mortgage Market

Donggwan Kim, Student, Washington University in St. Louis, United States

Zhenling Jiang, Assistant Professor, University of Pennsylvania, United States

Raphael Thomadsen, Professor, Washington University in St. Louis, United States

We study the impact of racial diversity in advertising on consumer choices in the mortgage refinance market. Using deep learning and causal ML algorithms, we find that diverse representation significantly increases ad effectiveness, and such an increase is driven by both White and minority consumers. We conclude with managerial implications.

115-1726 Loot Box Design and Implications for Profits and Welfare

Jin Miao, Student, The University of Texas at Dallas, United States

Sanjay Jain, Professor, University of Texas at Dallas, United States

We study the optimal design of loot boxes and its impact on profits and social welfare. We find that loot boxes enable firms to earn higher profits due to better price discrimination and market expansion. Contrary to common wisdom, loot boxes can improve consumer and social welfare.

115-1759 Recommender (Eco)system

Lei Huang, Student, Massachusetts Institute of Technology, United States

Juanjuan Zhang, Professor, Massachusetts Institute of Technology, United States

We develop a recommender system that incentivizes content creation to enhance long-term user utility. The algorithm balances how easy it is to motivate a creator with demand (e.g., user views) and how valuable a creator is to users. We demonstrate both theoretically and empirically the efficacy of our algorithm.

Invited Session

123	Monday, 04:30 PM - 06:00 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Non-medical interventions in healthcare policies	
	Chair(s): Jingxuan Geng	

115-1188 No Panic in Pandemic: The Impact of Individual Choice on Public Health Policies

Miao Bai, Assistant Professor, University of Connecticut, United States

Ying Cui, Assistant Professor, University of Minnesota, United States

Guangwen Kong, Associate Professor, Temple University, United States

Zhenhuan Zhang, Student, University of Minnesota, United States

We study the strategic planning of public health policies (lockdown, social distancing, and vaccination) to contain a pandemic by considering individual response. We derive insightful structural properties and discuss their implications on the timing and stringency of public health policy implementation to balance their resulting economic loss and disease burden.

115-1293 Advice provision in the pandemic: the impact of information granularity on social protection

Yang Zhang, Assistant Professor, Brunel University, United Kingdom

Monday, 04:30 PM - 06:00 PM

Guangwen Kong, Associate Professor, Temple University, United States

Jingjing Weng, Student, Temple University, United States

We examine how the granularity of information provided by the social planner affects the efforts of people in pandemic protection. We illustrate how the optimal information provision strategy shifts from decomposed statistics for each age group to aggregate statistics over all age groups when the epidemic becomes increasingly transmissive.

115-1553 Favorable Risk Selection in Medicare Advantage: The Effect of Allowing Non-Medical Services

Woonam Hwang, Assistant Professor, University of Utah, United States

Jonas Jonasson, Assistant Professor, Massachusetts Institute of Technology, United States

Heikki Peura, Assistant Professor, Imperial College London, United Kingdom

The US CHRONIC Care Act allows Medicare Advantage plan providers to offer an expanded range of non-medical supplementary services, with the goal that this integration will improve health outcomes. We develop a game-theoretical model to study the impact of this policy change on decisions and outcomes.

Invited Session

124

Monday, 04:30 PM - 06:00 PM, Regency Ballroom Q

Track: Revenue Management and Pricing

Invited Session: Operations in Online Platforms

Chair(s): Harish Guda Yuqi Yang

115-0548 Should Gig Platforms Decentralize Dispute Resolution?

Wee Kiat Lee, Student, Cornell University, United States

Yao Cui, Assistant Professor, Cornell University, United States

Emerging platforms are proposing to resolve disputes on the platform with a tribunal system, where the dispute resolution is relegated to individual users through a voting mechanism. We study how such decentralized dispute system can achieve fairness, and examine whether this system is more profitable than the traditional centralized dispute.

115-0668 Combined Pricing and Inventory Control for Perishable Products

Zichun Liu, Student, McGill University, Canada

Sentao Miao, Assistant Professor, McGill University, Canada

Wei Qi, Associate Professor, Tsinghua University Department of IE, China

We address the simultaneous determination of pricing and inventory control for perishable products to maximize profit. The optimal policy is computationally intractable due to the curse of dimensionality. We show our approximate policy is asymptotically optimal under several parameter regimes.

115-1610 Competitive Pricing in the Presence of Manipulable Information in Online Platforms

Harish Guda, Assistant Professor, Arizona State University, United States

Yuqi Yang, Student, Arizona State University, United States

Hongmin Li, Professor, Arizona State University Tempe, United States

Sellers on online platforms often misrepresent the quality of their goods/services, e.g., by manipulating customer opinions. We analyze an oligopoly where sellers, heterogeneous in their true quality, jointly choose their prices and the extent of manipulation. Manipulation benefits higher quality firms and hurts lower quality firms.

115-1916 The Impact of Waiting Time on Consumer Choice Behavior

Ruxian Wang, Professor, Johns Hopkins University, United States

Chenxu Ke, Assistant Professor, Nanjing University, China

Zifeng Zhao, Assistant Professor, University of Notre Dame, United States

After customers make a choice among multiple products or services, they sometimes have to wait for a while before receiving their purchased item due to the firm's limited capacity to process orders. We incorporate the anticipated wait into customers' choice behavior, and study the associated operations problems.

Invited Session

126

Monday, 04:30 PM - 06:00 PM, Regency Ballroom P

Track: Disruptive Technologies and Operations Management

Invited Session: FinTech and Crowdfunding

Chair(s): Murat Tunç

115-0906 Reward-Based Crowdfunding vs. Initial Coin Offerings

Yi Yang, Professor, Zhejiang University, China

Junming Hu, Student, Zhejiang University, China

Weili Xue, Professor, Southeast University, China

Some new financing techniques emerge as additional financing options for entrepreneurs that ordinarily faced difficulties in accessing traditional financing techniques. We build a stylized model to investigate how the product characteristics affect the entrepreneur's financing choice between crowdfunding and ICO, the two most popular strategies among the new techniques.

115-2086 Governing Decentralized Autonomous Organizations: The Promises and Perils of Decentralized Voting

Monday, 04:30 PM - 06:00 PM

Daniel Obermeier, Post Doc/Researcher, New York University, United States

Raveesh Mayya, Student, New York University, United States

Decentralized autonomous organizations (DAO) offer a new paradigm for organization design based on the principles of transparency, inclusion, and democracy. Instead of hierarchical decision-making, DAOs are governed by community-based voting. We use voting data from 613 DAOs to study how features of the voting system impact DAOs' performance.

Invited Session

127	Monday, 04:30 PM - 06:00 PM, Silver Spring 1	Track: Data Science and Analytics
	Invited Session: Data Science and Analytics for Supply Chains	
	Chair(s): Shivam Gupta Jyotishka Ray	

115-0082 Designing a Profitable Recommender Systems Under Limited Inventory

Jyotishka Ray, Assistant Professor, Miami University, United States

We design a profit maximizing recommender system by considering the past similarity based purchase probability of the customers and the backorder compensation policy by the e-retailer while making recommendation. A fast converging and efficient algorithm is developed that does not require any optimization. Model is validated using a real-world dataset.

115-0098 Avoiding Fields on Fire: Information Dissemination Policies for Environmentally Safe Crop-Residue Management

Mehdi Farahani, Assistant Professor, University of Miami, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Shouqiang Wang, Associate Professor, University of Texas Dallas, United States

Agricultural open burning, i.e., the practice of burning crop residue to prepare land for sowing a new crop, is a significant contributor to long-term climate change. We study how governments in developing countries can use effective information-disclosure policies to minimize agricultural open burning.

115-0404 Data-driven optimization for the economic design of adaptive quality control

Zhaoguang Xu, Associate Professor, Dalian University of Technology, China

Stefan Minner, Professor, Technische Universität München, Germany

Donghao Zhu, Student, Technische Universität München, Germany

Using mixed-integer linear programming and analytical approaches, we show the value of data when optimal chart parameters are learned as functions of features. Manufacturers can generate better quality control policies when costs for sampling, monitoring, process adjustments as well as false alarms and undetected failures are incorporated.

115-1141 The Waste Management Supply Chain: A Decision Framework

Prashant Chintapalli, Assistant Professor, Ivey Business School, Canada

Asoo Vakharia, Professor, University of Florida, United States

What are the roles of waste-generators, waste-managing-firms (WMF), and governments in handling the waste generated in an efficient manner? We examine the decisions of WMF and the impact of waste-generator and governments' actions on these decisions. We examine how governments should choose to exert their efforts to better handle waste.

Invited Session

128	Monday, 04:30 PM - 06:00 PM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Editor's Panel on traditional vs emerging topics and methodologies in Inventory and Logistics Mana	
	Chair(s): Arunachalam Narayanan Sandra Transchel	

115-2139 Panel: Editor's panel on the traditional vs emerging topics/methodologies in Inventory and Logistics Management

Arunachalam Narayanan, Associate Professor, University of North Texas, United States

A special editor's panel on the traditional vs emerging topics/methodologies in Inventory and Logistics Management in leading logistics and transportation journals

Invited Session

129	Monday, 04:30 PM - 06:00 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Innovation, Data Sharing, and Information Design	
	Chair(s): Soudipta Chakraborty	

115-0289 When does data sharing promote innovation?

Zhi Chen, Assistant Professor, National University of Singapore, Singapore

Jussi Keppo, Associate Professor, National University of Singapore, Singapore

Many innovations today are data-driven such as self-driving cars. To improve the algorithms of these products, firms make substantial investments in data collection. However, the data is limited for an individual firm. This paper studies whether data collected by individual firms should be shared in order to promote innovation.

Monday, 04:30 PM - 06:00 PM

115-0807 Information Design of a Delegated Search

Yangge xiao, Student, NUS Business School, Singapore
Zhenyu Hu, Associate Professor, National University of Singapore, Singapore
Shouqiang Wang, Associate Professor, University of Texas Dallas, United States

We consider a delegated search problem where the agent pays the search cost and decides when to terminate the search but only the principal can evaluate the search outcome. We obtain a complete analytical characterization of the principal's optimal policy as a sequence of decreasing acceptance standards.

115-1149 Persuading Skeptics and Fans in the Presence of Additional Information

Tamer Boyaci, Professor, ESMT Berlin, Germany
Soudipta Chakraborty, Assistant Professor, University of Kansas, United States
Huseyin Gurkan, Assistant Professor, ESMT Berlin, Germany

Motivated by the practice of firms selectively soliciting reviews from experts, we study the information design problem of a demand-maximizing firm launching a product of unknown quality to a polarized market consisting of customers who have heterogeneous prior beliefs about quality and can acquire additional information from outside sources.

115-1399 Impact of Women in the Invention Team on Product Development Outcomes

Nagarajan Sethuraman, Assistant Professor, University of Kansas, United States
Deepak Jena, Assistant Professor, Indian School of Business, India
Rachna Shah, Professor, University of Minnesota, United States
Shashi Kant Kumawat, Student, Indian School of Business, India

Does having additional women participate in research and product development teams result in more successful products downstream? We examine this question in the context of the pharmaceutical industry which has suffered from historically low women participation in the patent invention teams, leading US congress to act.

Invited Session

130	Monday, 04:30 PM - 06:00 PM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Incentives and Dynamics in Socially Responsible Operations	
	Chair(s): Han Zhang	

115-0026 Inventory-Responsive Donor Management Policy: A Tandem Queueing Network Model

Taozeng Zhu, Assistant Professor, Dongbei University of Finance & Economics, China
Nicholas Yeo, Assistant Professor, Xi'an jiaotong-liverpool university, China
Yini Gao, Assistant Professor, Singapore Management University, Singapore
Gar Goei Loke, Assistant Professor, Erasmus University, Netherlands

In the blood donor management problem, the blood bank incentivizes donors to donate, given blood inventory levels. We propose an optimization model to design donor incentivization schemes that account for the blood inventory dynamics and the donor's donation process. By adopting the Pipeline Queue paradigm, a tractable convex is formulated.

115-0039 A Dynamic Mechanism for Achieving Sustainable Quality Supply

Tracy Lewis, Professor, Duke University Durham, United States
Fang Liu, Associate Professor, University of Chinese Academy of Sciences, China
Jing-Sheng Song, Professor, Duke University Durham, United States

We consider a supply chain where a retailer relies on an economically-weaker supplier to supply a key material. The production process must comply with socially and environmentally responsible standards over time. We study the long term contracts that drive the suppliers to voluntarily comply to the standards.

115-0129 Green E-commerce: Environmental Impact of Fast Delivery

Chenshan Hu, Student, Washington University in St. Louis, United States
Xiaoyang Long, Assistant Professor, University of Wisconsin Madison, United States
Jiankun Sun, Assistant Professor, Imperial College London, United Kingdom
Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

In this paper, we empirically investigate how an increase in delivery speed influences consumer purchasing behavior and evaluate how this further leads to environmental issues. Then, we develop a model to explain our empirical results and accordingly, propose delivery pricing policies to achieve both environmental benefits and decent company revenue.

115-0234 Greenwashing under competition

Soraya Fatehi, Assistant Professor, University of Texas at Dallas, United States
Anyan Qi, Assistant Professor, University of Texas Dallas, United States
Liqun Wei, Assistant Professor, Central South University, China
Jianxiong Zhang, Professor, Tianjin University, China

We build a game-theoretic model in which a socially responsible firm with inherent CSR preference engages in price competition with a profit-maximizing firm that may greenwash. Customers are socially minded but have limited information about the firm's types. We derive the equilibrium of the game.

Monday, 04:30 PM - 06:00 PM

Sessions for Tuesday, May 23

Tuesday, 08:00 AM - 09:30 AM

Invited Session

133	Tuesday, 08:00 AM - 09:30 AM, Celebration 1	Track: Agriculture and Food Supply Chains
	Invited Session: Panel: Challenges and Research Opportunities in Agriculture and Food Supply Chains	
	Chair(s): Arzum Akkas Mert Hakan Hekimoglu	

115-1884 Panel: Challenges and Research Opportunities in Agriculture and Food Supply Chains

Yanchong Zheng, Professor, Massachusetts Institute of Technology, United States

Burak Kazaz, Professor, Whitman School of Management, United States

Deishin Lee, Associate Professor, Ivey Business School, Western University, Canada

Academic experts in the domain of agriculture and food supply chains discuss challenges and research opportunities.

Invited Session

134	Tuesday, 08:00 AM - 09:30 AM, Celebration 2	Track: Behavioral Operations Management
	Invited Session: Challenges in Behavioral Operations Management	
	Chair(s): Yao Jin	

115-0117 Impacts of Panic Buying on Supply Chain and the Interventions Towards Panic Buying

Ziqi Yun, Student, University of Warwick, United Kingdom

Mucahit Ozden, Post Doc/Researcher, University of Warwick, United Kingdom

Ahmed El-Said, Assistant Professor, Education, United Kingdom

Mujthaba Ahtamad, Assistant Professor, Education, United Kingdom

Forty-one relevant articles were analysed. Using the thematic analysis method, five significant impacts were extracted from the selected articles: the surge in demands, the shortage of panic buying items, the price increases, the delay or disruption in distribution and the changing in consumers' purchasing behaviour.

115-1301 Nudge Drivers to Stay; A behavioral perspective

Adebola Akintomide, Student, University of North Texas, United States

Michel Fathi, Assistant Professor, University of North Texas, United States

There are work challenges, insufficient compensation, and management style as reasons for driver attrition. Data was collected from a bus company(X) in the United States for preliminary analysis. The company's challenges are why drivers leaving in the first six months of hiring and looking for effective ways to retain drivers.

115-1750 Enhancing Organizational Identification for Emotional Labor: Implications for Managing Call Centers

Hyojeong Kim, CEO, Other, South Korea

Nagesh Murthy, Professor, University of Oregon, United States

Kwangtae Park, Professor, KUBS(Korea University Business School), South Korea

Anurag Agarwal, Professor, Florida Gulf Coast University, United States

In this paper, we study the antecedents of organizational identification of employees in emotional labor settings, such call centers. We use primary and secondary data to test hypothesis about the perceived organizational support for protection from rude customers and servant leadership style of supervisors. We also discuss managerial implications.

Contributed Session

135	Tuesday, 08:00 AM - 09:30 AM, Celebration 3	Track: Healthcare Operations Management
	Contributed Session: Policy Issues in Healthcare	
	Chair(s): Sanjay Ahire	

115-0088 System dynamics modeling for exploring the structural problems of FDA's medical device recalls

Chung-Cheng Chen, Assistant Professor, National Central University, Taiwan

Dong-Shang Chang, Professor, National Central University, Taiwan

Chia-Chen Yeh, Student, National Central University, Taiwan

Medical device recalls affecting the quality of medical care and the patient's health. The R&D investment of device manufacturers and the technical support of suppliers cannot effectively reduce device recalls. This study uses the methodology of systems dynamics to explore the structural issues of device recall from a macro perspective.

115-0475 COVID-19 and Health Information Exchange - State Designated Entity Type

C. Christopher Lee, Professor, Central Connecticut State University, United States

Young Sik Cho, Associate Professor, Jackson State University, United States

Yong-Taek Min, Assistant Professor, Florida Gulf Coast University, United States

Tuesday, 08:00 AM - 09:30 AM

There are four different types of State Designated Entity (SDE) for Health Information Exchange (HIE). This paper investigated if the HIE-SDE type made significant differences in the State response to the COVID-19. ANOVA model analyzed COVID-19 response data on CDC website.

115-0589 Adaptive Approval: Improving Timely Access to Treatments for Unmet Clinical Needs

Wendy Olsder, Assistant Professor, Erasmus University Rotterdam, Netherlands

Tugce Martagan, Associate Professor, Technische Universiteit Eindhoven, Netherlands

Jan Fransoo, Professor, Tilburg University, Netherlands

Carla Hollak, Professor, Amsterdam Medical Center, Netherlands

Adaptive approval is a novel regulatory program that enables earlier patient access to new drugs for rare diseases; however, industry participation has been surprisingly low. Our results inform healthcare policymakers on ways to redesign adaptive approval programs such that both firm participation and patients' access to new drugs will increase.

115-1393 Cancer Clinical Trial Selection and Recruitment Process Improvement at Hollings Cancer Center.

Sanjay Ahire, Professor, University of South Carolina, United States

This paper presents a methodology for selecting high potential cancer clinical trials and patient recruitment using a combination of secondary data, and subject matter experts' judgment, and external benchmarking. We discuss the organizational and professional biases and mental models that can pose a challenge in prioritizing life-saving trials.

Contributed Session

136	Tuesday, 08:00 AM - 09:30 AM, Celebration 4	Track: Healthcare Operations Management
	Contributed Session: Adoption and Use of AI in Healthcare	
	Chair(s): Yufei Huang	

115-0413 Triage III patients classification using machine learning techniques: Hospital del Bordo case

Jhon Segura-Dorado, Student, Corporación Universitaria Comfacaucua - Unicomfacaucua, Colombia

Helmer Paz Orozco, Professor, Corporación Universitaria Comfacaucua, Colombia

Juan Machuca, Professor, Universidad de Lima, Peru

Mario Chong, Professor, Universidad del Pacifico, Brazil

Triage is a patient classification system in emergency departments that allows quick and organized medical procedures. This research methodology focuses on classification methods (K-NN, Naive Bayes, individual trees, and random forest algorithms) to enable patient flow management with demand and clinical constraints. The case study in Colombia's medical system.

115-0887 Human And AI Collaboration - Incorporating AI as an enablement Into Adverse Event Identification

PROMIT ROY, Associate Director Business Operations and Innovation, Trinity College Dublin and Novartis Ireland Limited, Ireland

Yufei Huang, Associate Professor, Trinity College Dublin, Ireland

Junchi Ye, Student, Trinity College Dublin, Ireland

Introducing AI based technology in a Pharmaceutical firm working together with the data science and IT (Information Technology) team to create an AI and ML-based user-centric Chat Bot that captures real-time AE from chats used by the patients to interact. We observe a significant improvement in AE detection and monitoring.

115-1006 Optimal resource allocation for high-need high-cost patients by accurate cost prediction using deep learning models

Mohammad Morid, Assistant Professor, Santa Clara University, United States

Accurate and fair patient cost predictions are essential to support effective decision among regarding resource allocation that ca result in healthcare payor cost savings. To improve the performance of cost prediction models this study proposes a novel deep learning method to effectively leverage the temporal patterns underlying patient medical data.

115-1658 Technostress and Artificial Intelligence Adoptions in Healthcare

Hulya Yazici, Professor, Florida Gulf Coast University, United States

Chrissann Ruehle, Senior Lecturer, Florida Gulf Coast University, United States

Yong-Taek Min, Assistant Professor, Florida Gulf Coast University, United States

We examine the effects of AI characteristics, technostress creators, and inhibitors on healthcare staff outcomes. We propose a mixed methods approach to analyze quantitative survey data and qualitative data from semi-structured interviews to better understand the employee experience when AI is introduced into the healthcare workforce.

Invited Session

137	Tuesday, 08:00 AM - 09:30 AM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Value-based Care Models and Performance Impacts	
	Chair(s): Xin Ding	

115-0133 Does Pursuing Hospital Accreditation Tend to Improve Hospital Technical Efficiency?

Aaron Bonnett, Student, Texas A&M University College Station, United States

Gregory Heim, Professor, Texas A&M University College Station, United States

Rogelio Oliva, Professor, Texas A&M University College Station, United States

Tuesday, 08:00 AM - 09:30 AM

We use stochastic frontier analysis (SFA) to address whether hospital accreditation is associated with hospital efficiency. Our main findings indicate hospital accreditation is associated with an increase in hospital efficiency. We provide one of the first panel-based SFA analyses of the associated impact that hospital accreditation has on hospital efficiency.

115-0469 Hospital and Surgeon Experience and Patient Health Outcomes after Coronary Artery Bypass Graft Surgery

Jingyun (Jenny) Li, Assistant Professor, California State University Stanislaus, United States
Indranil Bardhan, Professor, University of Texas Austin, United States
Suresh Sethi, Professor, University of Texas Dallas, United States
Steves Ring, Professor, UT South Western, United States

We study three drivers of CABG readmission risk - case volume of hospitals and surgeons, variation in surgeon volume, and surgeon familiarity with hospitals. Drawing on patient datasets of CABG surgeries spanning three years, we study the relationships between hospital and surgeon case volume, readmission risk, and post-operative LOS.

115-0951 Benchmarking and Performance Progression under VBP Program Structure

Xin Ding, Assistant Professor, Rutgers Business School, United States

This paper examines how hospitals progress toward performance frontiers over time with a panel dataset comprising acute care hospitals in California between 2011 and 2019. We find that benchmarking drives performance improvements and performance progression rates are subject to the degree of operating focus and market competition.

115-1307 Conditional Approval & Value-Based Pricing for New Health Technologies

Ozge Yapar, Assistant Professor, Indiana University Bloomington, United States
Stephen Chick, Professor, INSEAD, France
Noah Gans, Professor, University of Pennsylvania, United States

Conditional-approval schemes postpone a new treatment's reimbursement decisions until after the collection of post-marketing data that can mitigate uncertainty regarding the treatment's cost-effectiveness. Our game-theoretic model examines when to use conditional approval and how to negotiate the post-marketing trial design, market access and pricing during and after the trial.

Invited Session

138	Tuesday, 08:00 AM - 09:30 AM, Celebration 6	Track: POM-Finance Interface
	Invited Session: Blockchain Technology Applications	
	Chair(s): Jiri Chod	

115-0166 Digital Voucher Financing and Transfer in a Three-echelon Supply Chain

Yaobin Wu, Student, Fudan University, China
Xiangfeng Chen, Professor, Fudan University, China
Xun Xu, Associate Professor, California State University Dominguez Hills, United States
Gangshu Cai, Professor, Santa Clara University, United States

Blockchain technology has been widely adopted in supply chain finance with the emergence and rapid development of financial technology. In this study, we focus on two of the financing programs facilitated by blockchain – digital voucher financing and transfer – and compare them with traditional bank financing.

115-0938 Trusting the Trust Machine: How does Blockchain Enhance Credibility in Supply Chain Finance

Hua Song, Professor, Renmin University of China, China
Wenyi Liu, Student, Renmin University of China, China
Siqi HAN, Student, Renmin University of China, China

Blockchain technology was recognized as a “trust machine” to the trust crisis in the supply chain finance. We adopt the multiple case method to explore the dynamic process that how blockchain-enabled capabilities reconfiguration and process reconfiguration reconstruct trust relationship in the supply chain finance network.

115-1055 Financing Platforms with Cryptocurrency: Token Retention, Sales Commission, and ICO Caps

Rowena Gan, Assistant Professor, Southern Methodist University, United States
Gerry Tsoukalas, Associate Professor, Boston University, United States
Serguei Netessine, Professor, The Wharton School, United States

Decentralized service platforms usually raise capital via initial coin offerings (ICOs). By examining the interplay of ICO design choices of such platforms including token retention, platform commission and ICO cap, we provide recommendations to firms with different visions on how to fund platforms under network effects.

115-2028 Resale with Non-Fungible Tokens

Yao Cui, Assistant Professor, Cornell University, United States
Jingchen Liu, Assistant Professor, Nanjing University, China

In this paper, we study NFTs as a novel means to facilitate resale. We characterize market conditions for NFTs to create value over traditional resale markets and prescribe how to design NFT features (such as the royalty fee) to maximize its value.

Contributed Session**139**

Tuesday, 08:00 AM - 09:30 AM, Celebration 7

Track: Sustainable Operations Management

Contributed Session: **Strategic and Policy Issues in Sustainable Operations**

Chair(s): Weihua Zhang

115-0576 The impact of government policy on the competition between OEMs and independent remanufacturers (IRs)

Gendao Li, Professor, Changchun University of Science and Technology, China

Marc Reimann, Professor, University of Graz, Austria

Weihua Zhang, Assistant Professor, University of Northumbria, United Kingdom

This study investigates supply chains that consist of OEMs either implementing or not implementing remanufacturing and IRs only remanufacturing used products. Governments levy taxes on both new and remanufactured products as well as subsidising remanufactured products. Mathematical programming models are employed to analyse the various impacts of different government policies.

115-1516 Rapid experimentation as boundary object to design circular business models

Hannu Makkonen, Professor, University of Vaasa, Finland

Erwan Mouazan, Post Doc/Researcher, University of Vaasa, Finland

This paper provides insight into how ecosystem actors designing complex circular business models may benefit from shedding light on the boundary work practices taking place, more specifically when developing rapid experimentation leading to bridge the design-implementation gap of circular business models.

115-1725 Green entrepreneurial orientation, institutional resources and organizational performance. A resource orchestration approach.

Okyere Anim Barima, Student, Kwame Nkrumah University of Science and Technology, Ghana

Nathaniel Boso, Professor, Kwame Nkrumah University of Science and Technology, Ghana

David Asamoah, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana

Abdul-Samed Muntaka, Senior Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

Emmanuel Quansah, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

Research has proven that aside intrinsic motivation, other factors that could help shape up green entrepreneurial orientation (GEO) include institutional context and resources. This study addresses how organizations could orchestrate GEO and institutional resources to result in enhanced performance under different conditions of power asymmetry and financial slack.

115-1888 Improving supply chain sustainability by due diligence acts? Insights from a German case

Marcus Brandenburg, Professor, Flensburg University of Applied Sciences, Germany

Germany's act for due diligence in supply chains (SCs) represents a strong governmental intervention into global operations and SC management which is worth being studied. Expert interviews with managers reveal risk factors and opportunities as well as performance impacts and implementation issues. A conceptual framework and research avenues are outlined.

Invited Session**140**

Tuesday, 08:00 AM - 09:30 AM, Celebration 8

Track: Sustainable Operations Management

Invited Session: **Sustainable Operations in Developing Economies**

Chair(s): Gonzalo Romero Andre Calmon

115-0638 Innovative Business Models in Ocean-Bound Plastic Recycling

Opher Baron, Professor, University of Toronto, Canada

Gonzalo Romero, Assistant Professor, University of Toronto, Canada

Sean Zhou, Professor, Chinese Univ of Hong Kong, Hong Kong, China

Zhuoluo Zhang, Post Doc/Researcher, Chinese Univ of Hong Kong, Hong Kong, China

We study novel business models of organizations aiming to tackle ocean plastic pollution with triple bottom line objective -- profit, environmental and social impacts. They sell (a) plastic offsets and (b) segregated plastic. We analyze supply chain models of (a), (b) or both. We use data to unveil additional insights.

115-0639 Operational Challenges for EMS Platforms in Developing Economies

Pieter van den Berg, Associate Professor, Erasmus University Rotterdam, Netherlands

Andre Calmon, Assistant Professor, Scheller College of Business, United States

Andreas Gernert, Assistant Professor, Kuehne Logistics University, Germany

Stef Lemmens, Assistant Professor, Erasmus University Rotterdam, Netherlands

Gonzalo Romero, Assistant Professor, University of Toronto, Canada

Many developing economies lack the health-emergency infrastructure of developed countries. Our industry partner Flare (Nairobi, Kenya) coordinates existing ambulance providers through a platform. Flare aggregates the available ambulance capacity and demand for emergency services. Since ambulance platforms make use of independent providers, the ambulance fleet can only be partially controlled.

115-0868 Weaving a Prosperous Future: A Data-driven Approach to Improve Artisans' Productivity

Ben Liu, Student, New York University, United States

Divya Singhvi, Assistant Professor, New York University, United States

Somya Singhvi, Assistant Professor, University of Southern California, United States

Tuesday, 08:00 AM - 09:30 AM

Xinyu Zhang, Student, New York University, United States

This work is in close collaboration with a social enterprise that works with thousands of women artisans from low-income households in India. Using a multi-method approach that combines field-based research, empirical analysis and optimization tools, we show that regular supervision can significantly improve artisans' productivity.

115-0910 Storing Carbon in Closed-Loop Supply Chain

Donghyun (Daniel) Choi, Student, Georgia Institute of Technology, United States

Andre Calmon, Assistant Professor, Scheller College of Business, United States

Beril Toktay, Professor, Georgia Institute of Technology, United States

Motivated by a manufacturing company that uses bio-based materials, we model a firm that optimizes a product's material composition and the amount of carbon offsets it must purchase to achieve carbon neutrality. By analyzing how different carbon accounting mechanisms shape the firm's decisions, we unravel managerial insight for carbon-neutral operations.

Contributed Session

141

Tuesday, 08:00 AM - 09:30 AM, Celebration 9

Track: Supply Chain Management

Contributed Session: Supply Chain Collaboration

Chair(s): Osman Alp

115-0224 Coexistence or encroachment in industrial symbiosis

Xiaoying Tang, Student, Southeast University, China

Osman Alp, Associate Professor, University of Calgary, Canada

Yong He, Professor, Southeast University, China

This paper considers an industrial symbiosis (IS) system composed of a supplier and a manufacturer, and examines the optimal production strategies of both the supplier and the manufacturer under the coexistence mode and encroachment mode and investigates the mode choice of IS for the supplier.

115-1415 Supply Chain Collaboration: Two is a party, three is a crowd?

Bo Van Der Rhee, Professor, Nyenrode University, Netherlands

Jack Van Der Veen, Professor, Nyenrode University, Netherlands

Ata Zare, Assistant Professor, Nyenrode Business University, Netherlands

Andriy Sirchenko, Assistant Professor, Nyenrode Business University, Netherlands

Venu Venugopal, Professor, Nyenrode University, Netherlands

Supply chain collaboration is believed to be beneficial to all entities, yet in practice end-to-end collaboration is rarely witnessed. We explain this by demonstrating that in multi-echelon supply chains collaborating with the neighboring entity leads to win-win, yet it is better to wait for other entities to move first.

115-1416 The practice of Supply Chain Collaboration: Soft is Hard?

Bo Van Der Rhee, Professor, Nyenrode University, Netherlands

Jack Van Der Veen, Professor, Nyenrode University, Netherlands

Ata Zare, Assistant Professor, Nyenrode Business University, Netherlands

Bin Yu, Assistant Professor, Nyenrode University, Netherlands

Venu Venugopal, Professor, Nyenrode University, Netherlands

Although theoretically Supply chain collaboration is beneficial to all entities, in practice it does not happen to the extent expected. To explain this gap, we make an inventory of requirements and impediments to establish collaboration using the ability-motivation-opportunity framework. It is concluded that 'soft' (behavioral) factors form the key hurdles.

115-1804 Supplier Encroachment with Decision Biases

Xiaolong Guo, Associate Professor, University of Science and Technology of China, China

Zenghui Su, Student, University of Science and Technology of China, China

Quan Zheng, Associate Professor, University of Science and Technology of China, China

To investigate a supply chain containing the retailer and direct selling channel, we considered biases of retailer and supplier. Here, we developed a game-theoretic model. By analyzing the model, we found that the supplier's bias always hurt herself while the retailer could benefit from his own underestimation bias.

Invited Session

142

Tuesday, 08:00 AM - 09:30 AM, Celebration 10

Track: Supply Chain Management

Invited Session: Analytics in Operations and Supply Chain

Chair(s): Ruihao Zhu

115-0018 Data Sharing and Analytics in the Supply Chain: A Theoretical Analysis

Yue Li, Assistant Professor, Shandong University, China

I consider a theoretical model where data on demand is readily available, and a newsvendor can analyze the data (at a cost) to learn a noisy signal before ordering from a producer. I derive the trade-offs of data sharing and data analytics. Two sources of equilibrium learning inefficiencies are identified.

Tuesday, 08:00 AM - 09:30 AM

115-0395 Multi-Item Online Order Fulfillment in a Two-Layer Network

Yanyang Zhao, Student, University of Chicago, United States
Xinshang Wang, Research Scientist, Alibaba Group, United States
Linwei Xin, Associate Professor, University of Chicago, United States

We study a real-time online order-fulfillment problem. An order can be split and fulfilled from multiple warehouses at an additional cost. We focus on an RDC-FDC network that major e-retailers have implemented in practice. We analyze the performance of a simple myopic policy and provide theoretical bounds on its performance.

115-0671 Concentration or Democratization Effects of an Online Marketplace

Rakesh Allu, Student, Cornell University, United States
Vishal Gaur, Professor, Cornell University, United States

Online B2B marketplaces brings together sellers and buyers from geographically dispersed markets. Using a large-scale dataset containing millions of buyer-seller transactions in an online B2B marketplace, we empirically investigate whether such integration of markets leads to concentration or democratization of market power and then design the platform's optimal marketing strategy.

Invited Session

143

Tuesday, 08:00 AM - 09:30 AM, Celebration 11

Track: Social Media and Web 2.0

Invited Session: **Power of Social Media**

Chair(s): Yumei He

115-0080 Factual vs. Non-Factual Awareness During Emergency Response on Social Media

Abhishek Ray, Assistant Professor, George Mason University, United States
Chahat Raj, Student, George Mason University, United States
Hemant Purohit, Assistant Professor, George Mason University, United States

We use the opinion dynamics framework to build a game-theoretic model on a representative social network consisting of multiple nodes, one of which is the emergency operations manager. Using both dissemination and refutation as strategies, we establish conditions under which either strategy is optimal.

115-1232 Effects of Real-Time Sales Data on Sales Performance: A Randomized Field Experiment in Livestream Selling

Yumei He, Assistant Professor, Tulane University, United States
Lingli Wang, Assistant Professor, Beijing university of post and telecommunications, China
Ni Huang, Associate Professor, University of Miami Business School, United States
Yan Sun, Data analytics manager, Alibaba Group, China

A randomized field experiment in partnership with Alibaba finds that the sales of presale products in the treatment group approximately increased by 27.5% compared with those presale products sold by streamers in the control group, due to streamers' improvisation on streaming tactics.

115-1883 Frustrated but Politely: the Effects of Emotions and Politeness on the Success of Educational Fundraising.

Yasamin Hadavi, Student, Baylor University, United States
Xunyi Wang, Assistant Professor, Baylor University, United States

We aim to identify factors of fundraising success using data from a leading educational crowdfunding platform. We found that impoliteness expressed in the request description is negatively related to fundraising success and positive emotions have a negative impact on fundraising success, whereas negative emotions have a positive impact on it.

115-1931 Discovering a Visits-based Local Market Structure using Mobility and Social Media Data

Yan Leng, Assistant Professor, The University of Texas at Austin, United States
Ashish Agarwal, Associate Professor, The University of Texas at Austin, United States

Firms interact with their competitors and complementors within a multi-firm environment. We formulate a new problem to discover local market structure---complementary and substitutions based on visits---for a particular store or service outlet. We develop a scalable framework, which relies only on social media and mobility and social media data.

Invited Session

144

Tuesday, 08:00 AM - 09:30 AM, Celebration 12

Track: Humanitarian Operations and Crisis Management

Invited Session: **Tutorial on Humanitarian Operations**

Chair(s): Harwin De Vries

115-2138 Panel: Teaching Humanitarian Operations

Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands
Maria Besiou, Professor, Kuehne Logistics University, Germany
Jarrod Goentzel, Senior Lecturer, MIT, United States
Diego Vega, Assistant Professor, HUMLOG Institute, Finland
JOAKIM KEMBRO, Associate Professor, Lund University, Sweden

In this session, an experienced and diverse list of panelists from academia will discuss teaching strategies for a course on humanitarian operations/humanitarian logistics. The panel will concentrate on topics, materials, risks, and best teaching practices.

Tuesday, 08:00 AM - 09:30 AM

Contributed Session

145

Tuesday, 08:00 AM - 09:30 AM, Celebration 13

Track: Teaching/Pedagogy in POM

Contributed Session: Online Education and Digital Technology

Chair(s): Ana Rosado Feger

115-0602 Dark side of digital environments - Barriers preventing information sharing between students in online teaching

Pia Kastl, Lecturer, University of Bamberg, Germany

Lars Friedrich, Student, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany

Kai-Ingo Voigt, Professor, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany

Based on the media richness and social presence theories, we examined the willingness to share information in different learning environments. We conducted a survey in online and face-to-face courses (n=283). The results showed that exchange of information was significantly higher in face-to-face due to the perception of higher learning quality.

115-1491 Digital Technology's impact on uneven access to tertiary education

Peter Darko, Student, Kwame Nkrumah University of Science and Technology, Ghana

Marvin Owusu Ansah, Chief Operations Officer, Peadato Research Services, Ghana

Bismark Agyei, Chief Operations Officer, Peadato Education Services, Ghana

Bridget Appiah, Research Associate, Peadato Research Services, Ghana

Sampson Adom, Research Associate, Peadato Research Services, Ghana

The use of digital technologies has improved structural changes in educational systems; however, it is unclear whether digital technologies lead to equitable access to all. This study seeks to access how digital technologies impact uneven access to education.

115-1653 Creating Culture in Online Education

Ana Rosado Feger, Associate Professor, Ohio University, United States

Amy Taylor-Bianco, Professor, Ohio University, United States

Online education has expanded to every level of the academic enterprise. While students seek out online education for the enhanced flexibility and access, we note limitations in developing belonging and affinity to create more effective remote teams. We propose a model for developing institutional culture in an online setting.

Invited Session

146

Tuesday, 08:00 AM - 09:30 AM, Celebration 14

Track: Service Operations

Invited Session: Student Best Paper Competition 1

Chair(s): Benjamin Lawrence

115-0033 Multi-Armed Bandits with Endogenous Learning Curves: An Application to Split Liver Transplantation

Yanhan (Savannah) Tang Tang, Student, Carnegie Mellon University, United States

Andrew Li, Assistant Professor, Carnegie Mellon University, United States

Alan Scheller-Wolf, Professor, Carnegie Mellon University, United States

Sridhar Tayur, Professor, Carnegie Mellon University, United States

Inspired by experience-based learning, we consider a multi-armed bandit problem, where endogenous, parametric learning curves (LC) are embedded in the arms' reward functions. We propose the FL-UCB algorithms that can incorporate LC's parametric forms, prove its logarithmic regret, demonstrate its advantages, and apply it to the split liver transplantation problem.

115-1820 A Data-driven Approach to Improve Artisans' Productivity

Ben Liu, Student, New York University, United States

Divya Singhvi, Assistant Professor, New York University, United States

Somya Singhvi, Assistant Professor, University of Southern California, United States

Xinyu Zhang, Student, New York University, United States

Collaborating with a rug-manufacturing social enterprise of women artisans in rural India, we consider the problem of optimizing supervisor visit and develop a novel predict-then-optimize framework to improve productivity. We show the existence of a polynomial-time algorithm with competitive ratio of $1-1/\sqrt{e}$ and test the proposed methodology on actual data.

115-2141 Fast or Slow? Competing on Publication Frequency

Lin Chen, Student, INSEAD, France

Guillaume Roels, Professor, INSEAD, France

For information goods, longer publication cycles are more economical, but result in less timely information. Using a game-theoretic model, we characterize how information providers set their publication cycles and prices under competition. We show that firms should anticipate nonmonotone or abrupt changes in publication strategy in the process of digitalization.

115-2142 Can Predictive Technology Help Improve Acute Care Services? Investigating the Impact of Virtual Triage Adoption

Jiatao Ding, Student, INSEAD, Singapore

Michael Freeman, Assistant Professor, INSEAD, Singapore

Sameer Hasija, Professor, INSEAD, Singapore

Tuesday, 08:00 AM - 09:30 AM

Healthcare and technology companies have been developing and deploying virtual triage tools to help patients make better and more efficient self-triage decisions. This paper develops a queueing game model to investigate the impact of virtual triage in acute care services and optimal virtual triage accuracy to maximize its efficacy.

Invited Session

148	Tuesday, 08:00 AM - 09:30 AM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Navigating Trade-Offs: Fostering Worker Productivity and Performance in Service Settings	
	Chair(s): Paige Tsai	

115-0364 Algorithm Reliance Under Pressure: The Effect of Customer Load on Service Workers

Clare Snyder, Student, University of Michigan Ann Arbor, United States
Samantha Keppler, Assistant Professor, University of Michigan Ann Arbor, United States
Stephen Leider, Professor, University of Michigan Ann Arbor, United States

Algorithms may provide helpful advice in service settings, but its users (workers) cannot initially know if it will benefit them personally. Using laboratory experiments, we find that customer load drives workers' algorithm reliance and that this is partly because high customer loads promote workers' learning about algorithm quality.

115-1147 Creative Task Constraints and Knowledge Worker Productivity

Samer Charbaji, Student, University of Michigan Ann Arbor, United States
Stephen Leider, Professor, University of Michigan Ann Arbor, United States
Roman Kapuscinski, Professor, University of Michigan Ann Arbor, United States

Knowledge workers often work on creative tasks with an originality goal and a usefulness constraint. We conduct a lab experiment to examine how increasing usefulness constraints affect participants' creative output. Our results show a non-linear relationship between originality and usefulness and that "artificially" lowering constraints can sometimes improve employee performance.

115-1240 Leveraging the Experience: Exploration and Exploitation in Gig Worker Learning Process

Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States
Yuqian Xu, Assistant Professor, UNC Chapel Hill, United States
Hongyan Dai, Associate Professor, Central University of Finance And Economics, China

On-demand delivery through gig platforms is ushering in a new era of business operations. Utilizing data from one leading on-demand delivery platform in Asia, this paper seeks to investigate how experience affects worker performance in this new business setting.

Contributed Session

149	Tuesday, 08:00 AM - 09:30 AM, Coral Spring 2	Track: Emerging Topics in Operations Management
	Contributed Session: Transparency and Diversity, Equity, and Inclusion in the Workforce	
	Chair(s): Tomás Harrington	

115-0249 Differentiating on Diversity: How Disclosing Workforce Diversity Improves Brand Attitudes

Maya Balakrishnan, Student, Harvard Business School, United States
Jimin Nam, Student, Harvard Business School, United States
Ryan Buell, Professor, Harvard Business School, United States

We examine how consumers perceive the strategic decision companies make regarding whether to disclose workforce diversity information. We find no evidence that a company's disclosure of its workforce diversity data negatively affects attitudes or perceived company commitment to diversity, even when it reveals racial disparities across job categories.

115-0591 Water Embodiment-Gender-Skills: A New Nexus in Food Systems?

Ettore Settanni, Post Doc/Researcher, University of Cambridge, United Kingdom
Tomás Harrington, Associate Professor, University of East Anglia, United Kingdom

This study explores how publicly available input-output data might support human agency and the design of empowerment projects. We present intuitive analytics around the water intensity of crop production in India- linked to gender and skills- to navigate complex patterns of production and consumption in global value networks.

115-1221 A framework for ageing workforce management at international level

Niloofar Katiraei, Post Doc/Researcher, Padova University, Italy
Nicola Berti, Post Doc/Researcher, Padova University, Italy
Ilenia Zennaro, Assistant Professor, Padova University, Italy
Ajay Das, Professor, Baruch College, United States
Debra Dobbs, Associate Professor, University of South Florida, United States

A rapidly aging workforce is a reality that confronts many businesses and governments with a variety of challenges. Governments and companies seek solutions. Our study gathers data globally to develop a framework that identifies critical benchmarks on ageing workforce management practices and policies at three levels: company, country, and international.

115-1799 Operational Transparency: Showing We are Different

Simai He, Professor, Shanghai Univ. of Finance and Economics, China

Tuesday, 08:00 AM - 09:30 AM

Chris Ryan, Associate Professor, University of British Columbia, Canada

Danli Yao, Assistant Professor, University of Shanghai For Science & Technology, China

Meng Zheng, Student, University of British Columbia, Canada

Operational transparency, an emerging operational strategy, provides customers with information about firms' internal operations. We develop a model that captures operational transparency's mean-shifting and variance-reduction effects in a competition environment. We find that more heterogeneous markets will implement operational transparency. Also, symmetric firms may choose different strategies due to competition.

Contributed Session

150	Tuesday, 08:00 AM - 09:30 AM, Blue Spring 1	Track: Supply Chain Risk Management
	Contributed Session: Block Chain Technology/Supply Chain Risks	
	Chair(s): Rizwan Manzoor	

115-0400 Blockchain-backed Resilient Strategies in a Supply Chain under disruption

Rizwan Manzoor, Student, IIM Jammu, India

B.S. Sahay, Professor, Indian Institute of Management Jammu, India

Kapil Gumte, Assistant Professor, Indian Institute of Management Jammu, India

Sujeet Singh, Assistant Professor, Indian Statistical Institute Hyderabad, India

Current study investigates a disruption-affected risk-averse manufacturer [C-VaR (Conditional Value-at-Risk)] and fairness-concerned distributor's behaviour [unfairness-aversion utility function] for three-echelon supply-chain (SC) to establish resilience through blockchain-backed strategies of visibility and recovery. A scenario-based integrated multi-objective model (cost and shortage utility) is developed, and an analytical case study is performed.

115-0625 A new theory to explain the process of disruption management: coping

Nezih Altay, Professor, Depaul University, United States

Raktim Pal, Professor, James Madison University, United States

This is a conceptual paper and uses a theory building approach. It develops a conceptual framework adapted from coping theory in psychology to explain supply chain disruption management. It can help revise supply chain disruption management with an alternative lens that has not been applied before in this domain.

115-1802 Risk and trust as behavioral decision-making factors in supply chain risk management

Ying Liao, Associate Professor, East Carolina University, United States

Christopher Kwaramba, Assistant Professor, East Carolina University, United States

Seth Ketron, Assistant Professor, University of North Texas, United States

This paper investigates the influences of risk and trust as behavioral decision factors in supply chain risk management. Specifically, we explore the interactive effects among buyer and supplier risk cultures, perceived supply disruption risk, and trust in the supplier on a buyer's decision on safety stock quantity.

115-1868 Managing Supply Chain Risks using Blockchain Technology: Institutional Drivers, Strategic Choices and Impact

Run Niu, Associate Professor, Webster University, United States

Ying Fan, Associate Professor, University of Colorado Colorado Springs, United States

Maria Madlberger, Professor, Webster University, Austria

The study explores the development of Blockchain technology (BCT) for supply chain risk management (SCRM) based on business case studies. Institutional theory, operations strategy literature, and field data are utilized to develop a conceptual framework that links institutional drivers, strategic choices, and the strategic impact of BCT on SCRM.

Invited Session

151	Tuesday, 08:00 AM - 09:30 AM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research on Regulatory and Management Policies in Operations Management	
	Chair(s): Zachary Wright	

115-0193 Changing Standards And Drug Shortages In The Pharmaceutical Industry

Ivan Lugovoi, Assistant Professor, Kühne Logistics University, Germany

Enno Siemsen, Professor, University of Wisconsin, United States

Matching supply and demand is a fundamental task of supply chain management. Failure to supply a product is painful for consumers, but particularly so in the pharmaceutical industry, where the product is often necessary for the treatment of life-threatening diseases. Drug shortages, therefore, pose significant public health threats.

115-0312 Categorization of Environment Sustainable Practices and Associations with Firm Performance

Anqi Wu, Assistant Professor, Florida International University, United States

Ramanath Subramanyam, Associate Professor, University of Illinois Urbana-Champaign, United States

Gopesh Anand, Associate Professor, University of Illinois Urbana-Champaign, United States

In the climate change context, this study categorizes sustainable practices adopted by firms and associates adoption of each of the resulting practice bundles with firms' financial performance. Results from our empirical analyses suggest heterogeneity in the association between practice adoption and financial returns across firms with different emission impacts.

Tuesday, 08:00 AM - 09:30 AM

115-0955 Effectiveness of Inspection Types for Quality Outcomes

Zachary Wright, Student, Ohio State University, United States

John Gray, Professor, Ohio State University, United States

Regulatory inspections play an important role in maintaining acceptable quality standards for manufacturers. Contextual heterogeneity leaves it unclear as to which types of inspections will prove to be most effective in different situations. This study aims to explore the relative effectiveness of differing inspection types across contexts.

115-1707 The Effects of Collectivism and Organizational Tenure on the Emergence of Pre-Release Digital Piracy

Brett Massimino, Associate Professor, Virginia Commonwealth University, United States

Sean Handley, Professor, University of South Carolina, United States

We empirically investigate two forms of (national) cultural collectivism - in-group and institutional - and their interactions with the organizational tenure of digital product development team on the pre-release piracy of the product. Data are drawn from video game products released between 2000 and 2019.

Invited Session

152

Tuesday, 08:00 AM - 09:30 AM, Rainbow Spring 1

Track: Empirical Research in Operations Management

Invited Session: Empirical Research Using Quasi-Experimental Designs

Chair(s): In Joon Noh

115-1091 Better Call a Mechanic: An Empirical Examination of Real-Time Feedback and Automotive Repair Service Outcomes

Mariia Petryk, Assistant Professor, George Mason University, United States

We analyze the real-time feedback application in a major car dealership in the U.S. Using the DID methodology, we identify several effects: the submissions increase due to the app accessibility; the submission length and readability decrease due to the real-time mode. We link our findings to the IS success model.

115-1514 Does Legalizing Marijuana Affect Operational Performance?

Suvrat Dhanorkar, Associate Professor, Penn State University State College, United States

Suresh Muthulingam, Professor, Penn State University University Park, United States

In Joon Noh, Assistant Professor, Penn State University, United States

Leveraging a quasi-experimental setting, this study explores whether legalizing marijuana has an impact on operational performance at manufacturing facilities.

115-1983 Recharging Retail: Estimating Consumer Demand Spillovers from Electric Vehicle Charging Stations

Yash Babar, Assistant Professor, University of Wisconsin-Madison, United States

Gordon Burtch, Associate Professor, Boston University, United States

We study how the placement of electric vehicle (EV) charging stations impacts foot traffic at neighboring brick-and-mortar businesses. Our analysis focuses on the Tesla Supercharger network within the United States. We employ a differences-in-differences design, exploiting the staggered construction of Supercharger stations to quantify the effect.

115-2046 Political Power, Party Allegiance, and the Operations of Public Projects

Guillaume Lapierre-Berger, Student, McGill University, Canada

Juan Camilo Serpa, Associate Professor, McGill University, Canada

We argue that contractors' allocation of project resources is driven by political opportunism. Using a difference-in-differences analysis on U.S. public contracts data, we show that when a scandal dooms an incumbent's popularity, contractors re-allocate resources to other districts where the incumbent remains popular, exacerbating project delays in the original district.

Invited Session

153

Tuesday, 08:00 AM - 09:30 AM, Rainbow Spring 2

Track: Operational Excellence

Invited Session: Achieving Operational Excellence Through Strategic Organizational Alignment

Chair(s): Yuqi Peng

115-0659 Inventory Restocking Information and Customer Purchase Intention

Minseok Park, Assistant Professor, Salisbury University, United States

Kelly Eunjung Yoon, Assistant Professor, University of Mary Washington, United States

Jae-Young Oh, Assistant Professor, Central Washington University, United States

If stockout occurs, retailers often provide the restocking lead-time information for their stockout product. When a retailer established good coordination with their suppliers, one may expect a smaller variability in restocking lead-time. In this study, we investigate how restocking lead-time variability impacts online customers' willingness-to-wait for the stockout product purchase.

115-1348 Improving E-retailer Order Fulfillment Processes: Packing Boxes Better To Reduce Shipping Costs

Qilong Zhu, Student, Texas A&M University, United States

Gregory Heim, Professor, Texas A&M University College Station, United States

Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

Yunxia Zhu, Associate Professor, University of Nebraska Lincoln, United States

Tuesday, 08:00 AM - 09:30 AM

Logistics costs for order fulfillment and shipping materially affect the profitability of online retailers. We identified several order fulfillment tasks (i.e., customer order box packing, box assortment selection) that might be improved, potentially leading to reduced shipping costs and improved sustainability outcomes.

115-1704 The Effects of Mergers and Acquisitions on Operational Performance

Zhihao Zhang, Assistant Professor, University of Missouri At Kansas City, United States

Yuqi Peng, Assistant Professor, Salisbury University, United States

Yan Dong, Professor, University of South Carolina, United States

Yongyi Shou, Professor, Zhejiang University, China

We study the impact of mergers and acquisitions on firm's operational performance. We also seek to understand how firms recover their operational efficiency after merger and acquisitions.

115-2084 Exploring the role of time-to-owner notification and dealership network size on automotive recall outcomes

Anto Verghese, Assistant Professor, University of North Texas, United States

Xiaosong (David) Peng, Professor, Lehigh University, United States

Arunachalam Narayanan, Associate Professor, University of North Texas, United States

Sriram Venkataraman, Associate Professor, University of South Carolina, United States

Rachna Shah, Professor, University of Minnesota, United States

We examine whether the time-to-owner notification impacts recall completion ratio. Additionally, we test whether the relationship is moderated by dealership network size. We use 679 unique automotive recalls and a two-stage least squares estimation approach to test our hypotheses and conduct a series of robustness checks to corroborate our findings.

Invited Session

154	Tuesday, 08:00 AM - 09:30 AM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Auctions, Targeting, and Competition	
	Chair(s): Wenjia Ba	

115-0135 Information Disclosure in Generalized Second Price Auction : An Empirical Analysis with Heterogeneous Advertisers

Michelle Song, Assistant Professor, Boston College, United States

Mingxi Zhu, Student, Stanford University, United States

We analyze data from a platform that initiated a bid recommendation system and find that some advertisers may simply adopt the platform's suggestion instead of constructing their own bids. By designing the mechanism and aggregating the information of many bidders, the advertiser platform can assist less sophisticated advertisers.

115-0539 Search Neutrality and Competition between First-party and Third-party Sellers

Tianxin Zou, Assistant Professor, Warrington College of Business, United States

Bo Zhou, Associate Professor, University of Maryland, United States

Search neutrality regulations and legislations prohibit retail platforms from self-preferentially boosting first-party products' search rankings over third-party sellers'. We argue that although search neutrality increases consumers' search relevancy, it can reduce consumer and social surplus by alleviating price competition and inducing the platform's preemption of third-party seller entry.

115-1153 Budget Pacing in Repeated Auctions: Regret and Efficiency without Convergence

Bar Light, Postdoc Researcher, Microsoft Research, United States

We study the aggregate welfare and individual regret guarantees of dynamic pacing algorithms that are commonly used as bidding agents in Internet advertising platforms in the context of repeated auctions with budgets.

115-1339 Dynamic Coupon Targeting Using Batch Deep Reinforcement Learning: An Application to Livestream Shopping

Xiao Liu, Associate Professor, New York University, United States

We present an empirical framework for creating dynamic coupon targeting strategies for high-dimensional and high-frequency settings, and we test its performance using a large-scale field experiment. The model is estimated using batch deep reinforcement learning (BDRL).

Invited Session

155	Tuesday, 08:00 AM - 09:30 AM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Emerging Topics in Sustainable and Socially Responsible Supply Chain Management	
	Chair(s): Tao Lu	

115-0055 Shipment Monitoring, Allocation and the Impact on Food Waste

Tao Lu, Assistant Professor, University of Connecticut, United States

A firm sells a fresh produce to two markets. A sensor technology enables the firm to monitor and allocate the product based on the conditions of each unit and the transportation distances. Shipment monitoring, despite being advocated for the potential to reduce food waste, may increase the total waste.

115-0086 Impact of Social Learning on Consumer Subsidies and Supplier Capacity for Green Technology Adoption

Hang Ren, Assistant Professor, George Mason University, United States

Tuesday, 08:00 AM - 09:30 AM

Tingliang Huang, Associate Professor, Boston College, United States

Georgia Perakis, Professor, Massachusetts Institute of Technology, United States

Customers are usually a priori uncertain about their benefits from purchasing green-technology products (e.g., electric vehicles and solar panels) and consult reviews from adopters before making a purchase. We examine the impact of such social learning on the government's optimal dynamic consumer subsidies, considering the supplier's strategic capacity decision.

115-0540 Guided Delegation in Multi-tier Responsible Sourcing

Sammi Tang, Associate Professor, University of Miami, United States

Jing-Sheng Song, Professor, Duke University Durham, United States

In a three-tier supply chain setting where responsibility risk stems from Tier-2 suppliers and supplier selection is delegated to Tier-1 firm, we examine the benefit and potential risk of a guided delegation approach compared to full delegation.

115-0623 Dealing with Groups: Incentives and Requirements for Protecting Natural Resources and Improving Welfare

Joann de Zegher, Assistant Professor, MIT, United States

Dan Iancu, Associate Professor, Stanford University and INSEAD, United States

Erica Plambeck, Professor, Stanford University, United States

Xavier Warnes, Post Doc/Researcher, Stanford University, United States

Many global agricultural commodities are produced by poor smallholders, often involving illegal deforestation. We propose group incentives conditional on forest protection requirements as a mechanism to prevent this deforestation while increasing farmer welfare. We demonstrate the effectiveness of these incentives theoretically and using data collected from the Indonesian palm-oil context.

Invited Session

156	Tuesday, 08:00 AM - 09:30 AM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Innovative incentive models	
	Chair(s): Salar Ghamat	

115-0609 The Benefits-Value-Advisor (BVA) Program for Shoppable Medical Procedures

Jingyao Huang, Assistant Professor, University of Missouri At Kansas City, United States

Diwakar Gupta, Professor, University of Texas Austin, United States

Large price variation is prevalent for routine medical procedures such as MRI and CT Scan, which has led insurers to introduce the BVA program to steer beneficiaries to low-cost providers. We explore the providers' price responses, and the question that under which conditions the program saves costs for insurers.

115-1633 Incentive Mechanisms Design in On-Demand Digital Platforms

Yousuf Aziz, Student, State University of New York, United States

Zhiling GUO, Associate Professor, Singapore Management University, Singapore

Ram Ramesh, Professor, State University of New York, United States

Flexible service sourcing, uncertain demand, and variable earnings are key features of the sharing economy. To address workers' concern about significant earning variations, we propose forward contract mechanisms to manage labor supply in on-demand platforms that both maximize the platform's profitability and guarantee workers' minimum expected earnings.

115-2089 Encouraging Greater Use of Home Dialysis for Medicare Beneficiaries with ESRD Using Competitive Incentive Plan

Maryam Afzalabadi, Post Doc/Researcher, Lazaridis School of Business and Economics, Canada

Mojtaba Araghi, Associate Professor, Wilfrid Laurier University, Canada

Salar Ghamat, Associate Professor, Lazaridis School of Business & Economics, Canada

We study the use of competitive incentive models to align incentives of a payer and service providers. Our paper is motivated by the End-Stage Renal Disease Treatment Choices (ETC) Model of the CMS. We show conditioning incentive payments to performance of other providers can improve the outcome for all parties.

115-2116 Information-trigger contracts

Rongzhu Ke, Professor, Zhejiang University, China

Chris Ryan, Associate Professor, University of British Columbia, Canada

We study moral-hazard problems where principal and agent are risk neutral with bounded agent compensation. We show optimality of information-trigger (IT) contracts, where the agent receives a bonus when the likelihood ratio of output signals between two actions exceeds a trigger value and otherwise receives the minimum.

Invited Session

157	Tuesday, 08:00 AM - 09:30 AM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Online Advertising, and Digital Marketplaces and Platforms	
	Chair(s): Sami Najafi-Asadolahi	

115-0147 Leveraging Consensus Effect to Optimize Ranking in Online Discussion Boards

Gad Allon, Professor, The Wharton School, United States

Joseph Carlstein, Student, The Wharton School, United States

Tuesday, 08:00 AM - 09:30 AM

Yonatan Gur, Associate Professor, Stanford University, United States

Online discussion boards suggest users a recommended “feed” of comments made by other users to stimulate engagement. In this study, we validate a novel engagement driver capturing the level of discussion consensus. From this, we propose a dynamic model and class of algorithms that maximize engagement along the discussion path.

115-0162 Signaling Competition in Two-Sided Markets

Omar Besbes, Associate Professor, Columbia University, United States

Yuri Fonseca, Student, Columbia University, United States

Ilan Lobel, Assistant Professor, New York University, United States

Fanyin Zheng, Assistant Professor, Columbia University, United States

We study pricing and information design in two-sided marketplaces. We partner with a marketplace in LatAm to elucidate how much agents anticipate downstream competition. We propose a structural model that accounts for strategic behavior and show how revealing information about competition is a powerful lever for the platform.

115-0177 Dynamic Two-part Pricing and Bidding for Display Advertising Campaigns

Naren Agrawal, Professor, Santa Clara University, United States

Sami Najafi-Asadolahi, Associate Professor, Santa Clara University, United States

Stephen Smith, Professor, Santa Clara University, United States

We consider an advertising agency that manages ad campaigns by bidding for targeted viewers on an ad exchange. We formulate the problem as a Markov Decision Process and determine the optimal upfront fee and the CPM price to charge each campaign and the optimal dynamic bidding policy to serve campaigns.

115-0180 Dynamic Pricing and Capacity Optimization in Railways

Chandrasekhar Manchiraju, Student, UT Dallas, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Arvind Raghunathan, Senior Principal Research Scientist, Mitsubishi Electric Research Laboratories, United States

Motivated by our work with a major railway company in Japan, we analyze a joint pricing and capacity optimization problem, which is a more-general version of the canonical multiproduct dynamic-pricing problem. Our work provides railway administrators with simple and effective policies for pricing, capacity, and congestion management.

Invited Session

158	Tuesday, 08:00 AM - 09:30 AM, Regency Ballroom O	Track: Retail Operations
	Invited Session: Food Waste and Retail Operations	
	Chair(s): Ioannis Stamatopoulos Fiori Anglou	

115-0416 The Carbon Footprint of Cold Chain Food Flows in the United States

Junren Wang, Student, University of Illinois at Urbana Champaign, United States

Deniz Berfin Karakoc, Student, University of Illinois at Urbana Champaign, United States

Megan Konar, Associate Professor, University of Illinois at Urbana Champaign, United States

The refrigerated food supply chain is an energy-intensive, nutritious, and high-value part of the food system. Here, we estimate the 2017 cold chain food flows between counties in the United States. We also compute the 2017, and 2045 projections of carbon-dioxide emission for truck delivery of meat and prepared foodstuff.

115-0421 An empirical study of food waste in US food banks

Fan Zou, Student, University of South Carolina, United States

Luv Sharma, Associate Professor, University of South Carolina, United States

Pelin Pekgun, Associate Professor, University of South Carolina, United States

Sanjay Ahire, Professor, University of South Carolina, United States

We investigate operational factors which can help reduce food waste in food bank operations.

115-1075 Time-based Pricing at Grocery Stores? Transitioning Strategies under Retail Competition and Congestion Externality

Christopher Tang, Professor, University of California Los Angeles, United States

Steve Yoo, Associate Professor, University College London, United Kingdom

Dongyuan Zhan, Assistant Professor, University College London, United Kingdom

To examine “whether and when” stores should adopt intra-day time-based pricing under competition, we build a 2-stage dynamic duopoly game incorporating congestion externality. Two equilibria sustain: both firms adopt time-based pricing in stage 1, or one adopts in stage 1 and the other postpones adoption until stage 2.

115-1755 On the Profitable Buffet Design to Cut Food Waste

Yuwen Hu, Student, University of Michigan - Ann Arbor, United States

Ekaterina Astashkina, Assistant Professor, Ross School of Business, United States

Izak Duenyas, Professor, University of Michigan - Ann Arbor, United States

Tuesday, 08:00 AM - 09:30 AM

All-you-can-eat buffets are notorious for generating immense amounts of plate waste.. We build a model of a buffet operator who faces consumers with uncertain demand. We compare different buffet designs along the profit maximization and waste reduction metrics and suggest which design to use and when.

Invited Session

159	Tuesday, 08:00 AM - 09:30 AM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Novel Topics in Distribution Channel Management	
	Chair(s): Sandun Perera	

115-0517 Improving Parcel Delivery Operations by Using Autonomous Truck-Based Drones and Intermediate Points

Bo Lan, Student, West Virginia University, United States

Yoshinori Suzuki, Professor, Iowa State University, United States

This study extended the existing research of traveling salesman problems of a truck and a drone which is operated only on customers' sites. Discrete intermediate points on arcs provide more flexibility to drivers. Some well-developed metaheuristics showed promising saving of delivery time than the existing model.

115-0526 How Upstream Bundling Interacts with Distribution Contracts

Yuanzhao Tang, Student, University of Science and Technology of China, China

Qingning Cao, Associate Professor, University of Science and Technology of China, China

Xiang Ji, Post Doc/Researcher, University of Science and Technology of China, China

Sandun Perera, Associate Professor, University of Nevada, Reno, United States

Xianjun Geng, Professor, Tulane University, United States

We examines the interaction between a firm's bundling strategy and a platform's distribution contract. We identify the conditions under which the firm prefers bundling in the wholesale and agency contracts, and further find that the firm's bundling incentivizes the platform to adopt agency contract even when commission rate is low.

115-0566 Truck vs Drone for Network Deliveries

Sandun Perera, Associate Professor, University of Nevada, Reno, United States

Duc Vu, Assistant Professor, University of Michigan-Flint, United States

Emerging technologies such as drone delivery offer unprecedented delivery speed and adaptable delivery lead times. Whereas, traditional delivery methods (e.g., trucks) have the advantage of reducing operational costs. We analyze the trade-offs of these two delivery modes and study which mode (s) should be offered by a retailer.

115-1869 Retail Competition using Drones

Sandun Perera, Associate Professor, University of Nevada, Reno, United States

When drones are employed to deliver packages, the competition between drone-equipped retailers could revolutionize the current delivery networks. We study the implications of competition between retailers with drone delivery capabilities and show that retailers will create local monopolies around their warehouses to maximize their profits under price and delivery-speed competition.

Invited Session

160	Tuesday, 08:00 AM - 09:30 AM, Silver Spring 1	Track: Data Science and Analytics
	Invited Session: Operational Perspectives on Blockchain Applications	
	Chair(s): Guangzhi Shang	

115-0228 Blockchain-enabled business model design for operations innovations: a multi-year study of blockchain adoption

Yuanzhu Zhan, Associate Professor, University of Birmingham, United Kingdom

Kim Hua Tan, Professor, University of Nottingham, United Kingdom

Yu Xiong, Professor, University of Surrey, United Kingdom

XINJIE (Daniel) XING, Associate Professor, University of Liverpool, UK, United Kingdom

Fei Ye, Professor, South China University of Technology, China

Existing research on blockchain-enabled digital transformation has collectively focused on the critical role of firms in developing a specific, sometimes novel, and often enduring activity system during early years. Accordingly, the proposed study investigates the mechanisms involved in this process for effective blockchain-enabled business model design and operations innovations.

115-0276 Transparentizing Supply Chain: Is Blockchain a Supplement or Substitute for Consumer Trust toward Retailers?

Yanji Duan, Assistant Professor, University of North Florida, United States

Qingyun Zhu, Assistant Professor, University of Alabama in Huntsville, United States

Joseph Sarkis, Professor, Worcester Polytechnic Institute, United States

Blockchain facilitates supply chain (SC) transparency. Via two behavioral experiments, we find curvilinear relationships between consumers' blockchain knowledge and perceptions. We also show that blockchain-enabled SC transparency impacts consumer trust and purchase intention asymmetrically. Results show that blockchain is a supplement for consumer trust that can prompt future purchases.

115-0286 Blockchain and AI enabled-supply network risk modelling mechanism design, implementation challenges and subsequent utilities

Dequn Teng, Student, University of Cambridge, United Kingdom

Tuesday, 08:00 AM - 09:30 AM

Veronica Martinez, Associate Professor, University of Cambridge, United Kingdom

This research will focus on the design choice, implementation challenges, and subsequent utilities of Blockchain-AI technologies for supply network risk modelling purposes, based on a structured review, multi-case study (for suppliers and blockchain solution providers), and blockchain-AI system design. A blockchain-AI-enabled cooperative mechanism is designed and validated through simulations.

115-1437 Leading academics thoughts about blockchain and Web 3.0 - A survey-based study

XINJIE (Daniel) XING, Associate Professor, University of Liverpool, UK, United Kingdom

Guangzhi Shang, Associate Professor, Florida State University, United States

Yu Xiong, Professor, University of Surrey, United Kingdom

Seeing the rise of Web 3.0 revolution, this study has designed a series of questions and compiled a list of targeted respondents through a systematic literature review process. The expected research outcomes aim at bridging gaps between academics and politicians and making real impacts on blockchain and web 3.0 topics.

Invited Session

161	Tuesday, 08:00 AM - 09:30 AM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Collaboration and Scheduling in Logistics	
	Chair(s): Shoshana Anily	

115-0168 Collaboration among manufacturers in parallel machine scheduling under job-splitting environment is profitable

Tzvi Alon, algorithm engineer, Western Digital, Israel

Shoshana Anily, Professor, Tel Aviv University, Israel

The Parallel Machine Scheduling under job-splitting cooperative game is defined by manufacturers that hold uniform parallel machines, and are committed to produce some jobs, bearing the sum of their completion time cost on their machines. We prove that collaboration is profitable and present an infinitely large subset of the core.

115-0789 Managing Hybrid Manufacturing/Remanufacturing Inventory Systems with Random Production Capacities

Xiting Gong, Associate Professor, The Chinese University of Hong Kong, China

Suting Liu, Student, The Chinese University of Hong Kong, China

We study hybrid manufacturing/remanufacturing inventory systems with random demand, return and production capacities. We partially characterize optimal policy for general model and completely characterize it for models with one deterministic capacity and further characterize it for model with unlimited manufacturing capacity. We also conduct numerical studies to derive further insight.

115-1325 Co-exposure management in service systems

Binyamin Oz, Senior Lecturer, The Hebrew University of Jerusalem, Israel

Yael Perlman, Senior Lecturer, Bar-Ilan University, Israel

We consider multi-class service systems where customers (or jobs) are affected by being exposed to other customers while waiting for service. We study the steady-state performance with respect to some co-exposure measures under different scheduling policies.

115-1398 Information Provision from a Platform to Competing Sellers: The Role of Strategic Ambiguity

Noam Shamir, Assistant Professor, Tel Aviv University, Israel

We study the ability of a platform to convey forecast information to its sellers via cheap-talk. Although information improves the payoff for both the platform and sellers, perfect information sharing cannot be achieved due to incentives misalignment. We illustrate that partial information sharing equilibrium can be sustained.

Contributed Session

162	Tuesday, 08:00 AM - 09:30 AM, Winter Park 49	Track: Product Innovation and Technology Management
	Contributed Session: Collaboration and Business Ecosystems	
	Chair(s): Debasish Mallick	

115-0345 -Impact of Development Tools on Internal Coordination, External Collaboration, and New Product Development Performance

Debasish Mallick, Professor, University of St. Thomas, United States

Sameer Kumar, Professor, University of St. Thomas, United States

Changyue Luo, Assistant Professor, Metropolitan State University Minnesota, United States

Many product development tools have emerged to facilitate new product development (NPD). Yet, their impact on NPD outcome is often in question. Using a survey of 453 firms we empirically explore the impact of internal coordination and external collaboration on the relationship between development tools and NPD Performance.

115-0810 Leveraging exploratory business ecosystems to produce breakthrough innovation: the role of absorptive and desorptive capacity

Marta Riquelme-Medina, Lecturer, University of Granada, Spain

Marcel Bogers, Professor, Eindhoven University of Technology, Netherlands

Vanessa Barrales-Molina, Associate Professor, University of Granada, Spain

Francisco Javier Llorens-Montes, Professor, University of Granada, Spain

Tuesday, 08:00 AM - 09:30 AM

This article investigates whether firms can leverage exploratory orientations in business ecosystems to enhance breakthrough innovation, and considers the joint moderation of absorptive/descriptive capacity. Using data from 262 firms, results show that firms benefit from exploratory ecosystems to produce breakthrough innovations, which can be maximised through knowledge absorption/desorption from/to the ecosystem.

115-1939 A Case Study of MBA "Product/Service" Restructuring Using Six-Sigma Methodology Tools

Jayant Saraph, Professor, Metropolitan State University Minnesota, United States

The MBA degree, a flagship product of business schools, is delivered in a very competitive environment of generally declining MBA enrollments recently. This paper deals with a case study of innovatively "restructuring of MBA program (product/service)" holistically at a regional university using a six-sigma methodology.

Invited Session

163	Tuesday, 08:00 AM - 09:30 AM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Emerging Issues in Socially Responsible Operations: NGOs and Developing Countries	
	Chair(s): Gokce Esenduran	

115-0066 Subsidizing Social Welfare Programs: Contracted Slots or Vouchers?

Wei Wei, Student, University of Massachusetts Amherst, United States

Priyank Arora, Assistant Professor, University of South Carolina, United States

Senay Solak, Associate Professor, University of Massachusetts Amherst, United States

We study the interplay of decisions by multiple players within two popular service-focused subsidy welfare programs--subsidy vouchers and contracted slots. Through game-theoretic models, we analyze how program-related factors influence the quantity and quality of services provided by local providers. We also compare the societal outcomes generated by these two programs.

115-0408 Yield Benefits of Alert-Based Interactive Voice Response System: A Case Study of Buland Shahar District

Campbell Clarkson, Student, University of South Carolina, United States

Necati Tereyagolu, Associate Professor, University of South Carolina, United States

Sriram Venkataraman, Associate Professor, University of South Carolina, United States

This paper investigates the yield effects of introducing an alert-based interactive voice response system to farmers, using the launch of one platform in Buland Shahar district in India as a case study. We also check if such effects could be explained by changes in fertilizer usage during the same period.

115-1259 Matching Volunteers to Clients in Non-Profit Organizations

Shikha Safaya, Student, Georgia Institute of Technology, United States

Basak Kalkanci, Associate Professor, Georgia Institute of Technology, United States

Ravi Subramanian, Professor, Georgia Tech, United States

Non-profit organizations are often challenged with the issue of volunteer retention. We explore the tradeoff between incorporating volunteer preferences in task assignments and pooling volunteers to alleviate the mismatch between supply and demand. We analytically derive the conditions under which a particular policy may be preferred.

115-1628 Allocation of Nonprofit Funds among Program, Fundraising, and Administration

Telesilla Kotsi, Assistant Professor, Fisher College of Business, United States

Arian Aflaki, Assistant Professor, Joseph M. Katz Graduate School of Business, United States

Goker Aydin, Professor, Johns Hopkins University, United States

Alfonso Pedraza, Professor, Indiana University, United States

How should nonprofits allocate funding among program, administrative, and fundraising expenses? We show that the allocation among the three expenses changes based on a nonprofit's initial capacity and beliefs about future needs. The model's calibration with a leading foodbank's data illustrates the practical relevance and implications of our study.

Invited Session

166

Tuesday, 09:45 AM - 11:15 AM, Celebration 1

Track: Agriculture and Food Supply Chains

Invited Session: **Agriculture Supply Chain Analytics**

Chair(s): Shailesh Divey

115-0146 Direct Trade Sourcing Strategies for Specialty Coffee

Burak Kazaz, Professor, Whitman School of Management, United States

Scott Webster, Professor, Arizona State University Tempe, United States

Shahryar Gheibi, Assistant Professor, Siena College, United States

Leading specialty coffee roasters rely on direct trade to source premium coffee beans. We study how characteristics of the operating and market environment affect the optimal sourcing strategy and incentives for a closer relationship with a grower.

115-0878 Vintech: Robo-advising Using Wine Analytics

Mert Hakan Hekimoglu, Assistant Professor, Rensselaer Polytechnic Institute, United States

Burak Kazaz, Professor, Whitman School of Management, United States

This paper utilizes analytics to help wine distributors build their wine portfolios. We first develop a pricing algorithm to represent the realistic value of a wine. We then compare the price evolution of underpriced wines to overpriced wines. Last, we construct portfolios for different investment goals and risk preferences.

115-1479 Capacity Management and Coordination in Contract Farming Supply Chains with Uncertainty and Risk Preferences

Chenqiang Yue, Student, University of Liverpool, UK, United Kingdom

Dong Li, Reader, University of Liverpool, UK, United Kingdom

Dongping Song, Professor, University of Liverpool, UK, United Kingdom

We consider two opposing risk preferences (i.e., risk aversion and risk seeking, respectively) for a farmer and build a Stackelberg game model with a leading agribusiness firm to analytically investigate and compare farmland investment and ordering quantity decisions under yield and demand uncertainty. Contractual coordination are studied with numerical analysis.

115-2085 Modelling Food Bank Donation Decisions in Retail Stores

Soodeh Jahdi, Student, Wageningen University, Netherlands

Rene Haijema, Associate Professor, Wageningen University, Netherlands

Renzo Akkerman, Associate Professor, Wageningen University, Netherlands

Sander de Leeuw, Professor, Wageningen University, Netherlands

Retailers aim to efficiently manage inventories of perishable products. Potentially remaining surplus inventory is often donated to organizations like food banks. We study the early identification of products that could be donated, which would help food banks to efficiently use these products and reduce waste in food supply chains.

115-2097 Transmission Interaction Persistence (TIP): A Supply Chain and Epidemiological Model for Zoonotic Diseases Outbreaks

Lu Chen, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Qihua Gao, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Retsef Levi, Professor, MIT, United States

Nicholas Renegar, Student, Massachusetts Institute of Technology, United States

El Ghali Zerhouni, Student, Massachusetts Institute of Technology, United States

Zoonotic diseases have caused global pandemics starting from live animal markets in China. This paper develops a supply-chain epidemiology model that explains the mechanism of viruses outbreaks in markets. It provides several managerial implications on the role of the supply chain structure and the environment to limit infection risks.

Invited Session

167

Tuesday, 09:45 AM - 11:15 AM, Celebration 2

Track: Behavioral Operations Management

Invited Session: **Panel: Past, Present and Future of Behavioral Operations**

Chair(s): Brent Moritz

115-2135 Panel: Past, Present and Future of Behavioral Operations

Brent Moritz, Associate Professor, Penn State University University Park, United States

Karen Donohue, Professor, University of Minnesota, United States

Jan Fransoo, Professor, Tilburg University, Netherlands

Rogelio Oliva, Professor, Texas A&M University College Station, United States

Panel discussion on the past, present and future of behavioral operations. Distinguished members will make opening remarks, respond to some questions and Q&A from the audience. Karen Donohue (Minnesota), Jan Fransoo (Tilburg), Rogelio Oliva (Texas A&M), moderated by Brent Moritz (Penn State).

Contributed Session

168

Tuesday, 09:45 AM - 11:15 AM, Celebration 3

Track: Healthcare Operations Management

Contributed Session: **Scheduling for Operating Rooms**

Chair(s): Manmohan Sodhi

115-0470 Equitable Anesthesiologist Scheduling under Demand Uncertainty Using Multi-Objective Programming

Kai Sun, Post Doc/Researcher, University of Texas at San Antonio, United States

Minghe Sun, Professor, University of Texas San Antonio, United States

Ronald Dravenstott, Director of Perioperative Informatics , The University of Texas Health Science Center at San Antonio, United States

Frank Rosinia, Professor, The University of Texas Health Science Center at San Antonio, United States

Arkajyoti Roy, Assistant Professor, University of Texas at San Antonio, United States

We present a data-driven two-step anesthesiologist scheduling framework for an academic anesthesiology department using mixed-integer programming models. Step 1 model designs optimal shifts under demand uncertainty. Step 2 model assigns shifts considering optimal and equitable workload distribution. Case studies, hiring planning and monthly scheduling, are addressed via the framework.

115-1686 Stochastic Optimization Approaches for an Operating Room and Anesthesiologist Scheduling Problem

Man Yiu Tsang, Student, Lehigh University, United States

Karmel Shehadeh, Assistant Professor, Lehigh University, United States

Frank Curtis, Professor, Lehigh University, United States

Beth Hochman, Associate Professor of Surgery , Columbia University Medical Center, United States

Tricia Brentjens, Associate Professor, Columbia University Medical Center, United States

We propose combined allocation, assignment, sequencing, and scheduling problems under uncertainty involving multiple operation rooms, anesthesiologists, and surgeries, as well as stochastic optimization methodologies for solving such problems under uncertainty. Using real-world surgery data, we conduct extensive experiments comparing the proposed methodologies and derive several managerial insights relevant to practice.

115-1736 A Pareto Improvement Bumping-Rescheduling Policy for Operating Room Scheduling

Hung Do, Associate Professor, University of Vermont, United States

David Novak, Associate Professor, University of Vermont, United States

We model and analyze a bumping policy called First-In-First-Out (FIFO) Bump Policy in the context of Operating Room Scheduling. For hospitals using shared operating rooms for scheduled and emergent cases, a bumping policy is needed to facilitate emergent cases when they arrive, but it often operates with competing objectives.

115-1910 Surgery Scheduling under Uncertainty

Nicklas Klein, Student, University of Bern, Switzerland

Nicola Travaglini, Student, University of Bern, Switzerland

Robin Hauenstein, Student, University of Bern, Switzerland

Norbert Trautmann, Professor, University of Bern, Switzerland

The scheduling of elective surgeries and randomly arriving emergency surgeries of uncertain durations in flexible operating rooms strongly influences patient-care and hospital-efficiency-related costs. We present a matheuristic based on a mixed-integer linear programming formulation and the results of an experimental performance analysis.

115-1998 Reducing elective surgery waiting times for NHS England

Manmohan Sodhi, Professor, Bayes Business School, United Kingdom

Patients in NHS England are waiting excessively long for elective procedures due to theatre underutilization. Data show significant differences between surgeons in the ratio of actual procedure time to the requested time. I propose a way for a hospital to create surgeon-specific scheduling (list creation) to decrease waiting times.

Contributed Session

169

Tuesday, 09:45 AM - 11:15 AM, Celebration 4

Track: Healthcare Operations Management

Contributed Session: **Models for Medication Management**

Chair(s): Kenan Arifoglu

115-0686 From Black to Grey: Improving Access to Antimalarial Drugs in the Presence of Counterfeits

Jiatao Ding, Student, INSEAD, Singapore

Saša Zorc, Assistant Professor, Darden School of Business, United States

Michael Freeman, Assistant Professor, INSEAD, Singapore

We study how donors should optimally allocate limited budgets, i.e., subsidize the purchases and/or sales of the private-sector distribution channel of antimalarial drugs, in markets where counterfeits are present, and what further interventions should or should not be taken to address the problems of counterfeit drugs.

115-1134 Managing Over-The-Counter Homogeneous Medicines

LAN LUO, Assistant Professor, University of Hartford, United States

Lizao Zhang, Assistant Professor, (CIF:ESG50985993), United States

Charles Munson, Professor, Washington State University Pullman, United States

Tuesday, 09:45 AM - 11:15 AM

Retail customers often have a choice for over-the-counter medicines between brand-name products and cheaper generic alternatives. Why do customers choose one or the other, and how willing are they to switch? We develop a profit model for a retail store to investigate pricing and inventory strategies for these substitutable products.

115-1190 Influencing Primary Care Antibiotic Prescription Behavior Using Financial Incentives

Salar Ghamat, Associate Professor, Lazaridis School of Business & Economics, Canada

Mojtaba Araghi, Associate Professor, Wilfrid Laurier University, Canada

Lauren Cipriano, Associate Professor, Ivey Business School, Canada

Michael Silverman, Professor, University of Western Ontario, Canada

Antibiotic resistance is an ongoing public health crisis that is escalated by overuse and misuse of antibiotics. We develop a stylized physician compensation model to reduce inappropriate antibiotic prescription and study the interaction between a payer and a provider who makes antibiotic prescription decisions for heterogeneous patients.

115-1680 The Generic Competition Paradox in the Prescription Drug Market

Qinquan Cui, Student, University College London, United Kingdom

Kenan Arifoglu, Associate Professor, University College London, United Kingdom

Dongyuan Zhan, Assistant Professor, University College London, United Kingdom

We build a game-theoretic model with signaling to explain the generic competition paradox (GCP), the price increase of a brand-name drug when a new generic drug enters the market and intensifies the competition. We examine the impacts of GCP on social welfare, and extend to allow multiple entrants.

Invited Session

171	Tuesday, 09:45 AM - 11:15 AM, Celebration 6	Track: POM-Finance Interface
	Invited Session: Advances in OM-Finance Interface	
	Chair(s): Vibhuti Dhingra	

115-0663 The Effect of Expedited Payments on Project Delays: Evidence from QuickPay Reform

Vibhuti Dhingra, Assistant Professor, York University, Canada

Volodymyr Babich, Professor, Georgetown University, United States

Harish Krishnan, Professor, University of British Columbia, Canada

Jie Ning, Associate Professor, Case Western Reserve University, United States

Contractors are not paid instantaneously upon completing the project tasks and furnishing the invoice. We study the impact of payment timings on project delays. We develop theories that explain how payment duration affects project completion, and generate testable hypotheses. We empirically test these hypotheses using data on U.S. public projects.

115-2020 Operational performance and financial performance: An impact assessment

HariPrasad Bellamkonda, Associate Professor, IIM Indore, India

Indian domestic air transport industry experienced tremendous growth in operational parameters over past decade. The ROIC tree model was applied to analyze their impact on financial performance and productivity. We examined how much an inferior entity would be improved if it imitates some productivity factors of well performing entity.

115-2056 Impact of Operational characteristics on Supply chain financing

HariPrasad Bellamkonda, Associate Professor, IIM Indore, India

We examine how the operational characteristics such as inventory salvage value and demand uncertainty influences the inventory stocking behavior and the capital structure decisions under asset-based borrowing constraints in supply chains. It is observed that inventory advance rates are more sensitive to firms' operational characteristics than interest rates.

Invited Session

172	Tuesday, 09:45 AM - 11:15 AM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: Environmental Technology Innovation and Adoption	
	Chair(s): Michael Lim Karthik Murali	

115-0155 Optimal Management of Renewable Energy Certificates (REC): A Reinforcement Learning Approach

Daeho Kim, Student, 000, South Korea

Dong Gu Choi, Associate Professor, 000, South Korea

Michael Lim, Professor, Seoul National University, South Korea

There exists a market-based instrument, Renewable Energy Certificate (REC), for promoting the renewable energy integration. Recently, a brokerage service has emerged to help renewable energy generators to participate into the REC market. This talk introduce the optimal REC management for the brokerage service provider based on a deep reinforcement learning.

115-0172 Impact of Taxes on the Adoption of Green Technologies

Gal Raz, Associate Professor, Ivey Business School, Western University, Canada

Paolo Letizia, Associate Professor, University of Tennessee, United States

Wangcheng Yan, Assistant Professor, Tongji University, China

Tuesday, 09:45 AM - 11:15 AM

In this paper we examine government emissions taxes on consumers and firms and show how these taxes impact the behavior of manufacturers in adopting a clean technology in a competitive market with two competing firms. Our results show the conditions under which each taxing mechanism works better.

115-0348 The Role of Driver Behavior in Moving the Electric Grid to Zero Emissions

Leann Thayaparan, Student, Massachusetts Institute of Technology, United States

Georgia Perakis, Professor, Massachusetts Institute of Technology, United States

As renewable energy production increases, energy storage becomes a significant challenge. Electric vehicles could act as distributed storage. However, complex driver behavior must be accounted for first. We combine machine learning with optimization to model driver behavior to size the capacity of energy storage electric vehicles can offer the grid.

115-1525 Allocation of recycling credits to final products in plastics production

Müge Cakan, Student, University of Mannheim, Germany

Moritz Fleischmann, Professor, University of Mannheim, Germany

Danja R. Sonntag, Associate Professor, Lund University, Sweden

Chemical recycling gives rise to a new planning problem for plastics manufacturers: How to allocate recycled material to final products. Current industry practice is subject to controversial debate, including concerns of greenwashing. We contribute to this debate by analyzing the impact of different allocation rules on environmental and economic performance.

Invited Session

173	Tuesday, 09:45 AM - 11:15 AM, Celebration 8	Track: Sustainable Operations Management
	Invited Session: Game Theory in Sustainable and Socially Responsible Operations	
	Chair(s): David Drake Hasti Rahemi	

115-0245 Servicizing and Remanufacturing in the Circular Economy: Economic and Environmental Implications

Xichen Sun, Student, Texas A&M University College Station, United States

Tharanga Rajapakshe, Associate Professor, University of Florida, United States

Rogelio Oliva, Professor, Texas A&M University College Station, United States

To investigate the complementarities between servicizing and remanufacturing, two widely used strategies in the circular economy, we consider a profit-maximizing manufacturer who explores the possibility of jointly adopting servicizing and remanufacturing. We identify conditions under which the firm can improve its economic and environmental performance at the same time.

115-0256 Trade-Off Between Social and Environmental Sustainable Investment in Competition

Mike Gordon, Assistant Professor, Virginia Polytechnic Institute And State University, United States

Titing Cui, Student, University of Pittsburgh, United States

Esther Gal-Or, Professor, University of Pittsburgh, United States

Michael Hamilton, Assistant Professor, University of Pittsburgh, United States

Jennifer Shang, Professor, University of Pittsburgh, United States

We study competition between firms using sustainable investment. Sustainable investment is separated into environmental and socially focused projects. We consider a context where a socially focused firm competes with a firm with projects in both sustainable domains.

115-1169 Coopetition in First Response Operations to Global Disasters

Hasti Rahemi, Student, University of Colorado Boulder, United States

David Drake, Assistant Professor, University of Colorado Boulder, United States

Cooperation among humanitarian organizations is widely encouraged. Yet, hurdles of cooperation, such as competition in the field of disaster response, are understudied. We investigate the effects of competition and the prospect of cooperation among HOs considering this competition from the perspective of a United Nations Humanitarian Response Depot (UNHRD).

Contributed Session

174	Tuesday, 09:45 AM - 11:15 AM, Celebration 9	Track: Supply Chain Management
	Contributed Session: SCM Practice and Performance	
	Chair(s): Andrea Patrucco	

115-0324 How Resilience Can Inform The Principle-Agent Relationship

Kevin Burnard, Associate Professor, Western Connecticut State University, United States

This research explores how organizations can design and implement robust supply chain relationships under challenging conditions. Following a review of relevant literature, attention is placed on the influence of resilience on the structure and interactions defined through the Principle-Agent Relationship. Informing the mechanisms that establish and maintain supply chain linkages.

115-1702 Operations Function in the Driver's Seat: Performance Effects of Operations Department Power

Sara Rezaee Vessal, Assistant Professor, ESSEC Business School, France

Mehdi Nezami, Assistant Professor, Bradley University, United States

Tuesday, 09:45 AM - 11:15 AM

The operations function continues to gain prominence as a strategic contributor to the firm. This study investigates the effect of operations department power (ODP) on shareholder wealth. We find that ODP exerts a positive effect on abnormal stock returns, and it has a negative effect on idiosyncratic risk.

115-1849 Supply chain integration for innovation projects: the role of project complexity and project management methods

Andrea Patrucco, Assistant Professor, Department of Marketing and Logistics, United States

Kostas Selviaridis, Associate Professor, Lancaster University, United Kingdom

Federica Ciccullo, Assistant Professor, Dipartimento di Ingegneria Gestionale, Italy

We ground our study on project complexity theory and through 15 innovation projects managed by eleven multinational firms, we explore supply chain integration decisions at the level of the innovation project. We identify distinct innovation project management strategies, understood as intertwined choices concerning project management methods and supply chain integration.

115-1933 Supply chain management practices and performance. The mediating effect of Logistics management information systems

Okyere Anim Barima, Student, Kwame Nkrumah University of Science and Technology, Ghana

John Marfo, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

Matilda Owusu-Bio, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

This study was conducted to examine the impact of LMIS usage in shaping the relationship between supply chain management practices and supply chain performance. Based on the gaps identified in literature, a framework of three main hypotheses was developed. A sample of 200 managers of health institutions were sampled.

Invited Session

175	Tuesday, 09:45 AM - 11:15 AM, Celebration 10	Track: Supply Chain Management
	Invited Session: Advances in Flexible Resource Allocation	
	Chair(s): Shixin Wang	

115-0127 A New Approach for Vehicle Routing with Stochastic Demand: Combining Route Assignment with Process Flexibility

Kirby Ledvina, Student, Massachusetts Institute of Technology, United States

Hanzhang Qin, Student, Massachusetts Institute of Technology, United States

David Simchi-Levi, Professor, Massachusetts Institute of Technology, United States

Yehua Wei, Associate Professor, Fuqua School of Business, United States

We propose a new approach for the vehicle routing problem with stochastic customer demands revealed before vehicles are dispatched. We combine ideas from vehicle routing and manufacturing process flexibility to propose overlapped routing strategies with customer sharing, and characterize the asymptotic performance of these strategies under probabilistic analysis.

115-0221 Real-Time Omnichannel Fulfillment Optimization

Zuguang Gao, Student, University of Chicago, United States

Zi Ling, Student, University of Chicago, United States

Varun Gupta, Associate Professor, University of Chicago, United States

Linwei Xin, Associate Professor, University of Chicago, United States

We consider an online omnichannel fulfillment problem. Suppose a retailer has brick-and-mortar stores and faces both online and offline demands. An online customer can be fulfilled by any store, whereas an offline customer must be satisfied by the local designated store. We develop efficient online algorithms with performance guarantees.

115-0930 Optimal Robust Sourcing with Volume Flexibility: Anticipatory Ordering Using the Shifting Operator

Joren Gijsbrechts, Assistant Professor, Catholic University of Portugal, Portugal

Christina Imdahl, Assistant Professor, Eindhoven University of Technology, Netherlands

Robert Boule, Associate Professor, KU Leuven, Belgium

Jan Van Mieghem, Professor, Northwestern University, United States

We study an inventory model with volume flexibility. We employ robust optimization and leverage the central limit theorem to express the robustly optimal base-stock levels in closed-form. The robustly optimal sourcing policy is characterized by a shifting operator defining how orders are shifted to make best use of base capacity.

115-1084 Sufficient Profitability without Significant Flexibility: The Impact of Margin Differentials on the Value of Flexibility

Shixin Wang, Assistant Professor, Chinese Univ of Hong Kong, Hong Kong, China

Jiawei Zhang, Professor, New York University, United States

Yichen Zhang, Assistant Professor, Krannert School of Management, United States

It is well believed that the value of flexibility increases as the profit margin differentials increases. Contrary to this intuition, we show that the value of flexibility decreases as the profit margin differential increases if we compare the fully flexible structure with a carefully designed sparse structure.

Invited Session

176	Tuesday, 09:45 AM - 11:15 AM, Celebration 11	Track: Social Media and Web 2.0
	Invited Session: Social Media and Video Game	
	Chair(s): Xuying Zhao Duc Vu	

Tuesday, 09:45 AM - 11:15 AM

115-1175 Selling vs Subscription for Information Goods Under Valuation Uncertainty

Duc Vu, Assistant Professor, University of Michigan-Flint, United States

Xuying Zhao, Associate Professor, University of Notre Dame, United States

Media market plays an important role in global economy. When a new product is released, the publisher considers whether to sell this product separately or to put in subscription service. Considering customers' valuation uncertainties of the new product, we derive the optimal strategy and provide managerial insights for the publisher.

115-1587 Content feeds on social media

Xuying Zhao, Associate Professor, University of Notre Dame, United States

Jane Gu, Associate Professor, University of Connecticut, United States

We consider a C2C media platform that provides content feeds to viewers. Some feeds are real content pieces, while some are ads. We study two decisions for the platform: the proportion of real content in content feeds and the degree of a variety in real content in content feeds.

115-1589 Niche Width, Internal Bonding and External Bridging: A Multilevel Perspective of Virtual Group Growth

Jingyi Sun, Assistant Professor, Stevens Institute of Technology, United States

Although internal bonding and external bridging social capital both affect virtual group sustainability, it is unknown why groups are inclined for internal or external networks. This study proposes a multilevel perspective that considers group niche width as the antecedent of internal and external networks, which affect group growth.

Invited Session

177	Tuesday, 09:45 AM - 11:15 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Priorities, Actions, & Modeling I	
	Chair(s): Miguel Jaller	

115-0575 A risk measurement to assess the strength and weaknesses of road networks

Daniel Rivera-Royero, Student, University of California Davis, United States

Miguel Jaller, Associate Professor, University of California Davis, United States

In this paper the authors develop a risk road network performance that considers the national risk index and topological road network performances (RNP) from the literature. Additionally, the authors provide a comparative analysis and insights about the capabilities of the road network on a set of cities in California.

115-0989 Social Cost - Vehicle Routing Problem in Post-Disaster Humanitarian Logistics

Azadeh Sadeghi, Assistant Professor, University of Michigan-Flint, United States

Felipe Aros-Vera, Associate Professor, Ohio University, United States

After a disaster, delivering supplies, especially water, in different formats, such as bottled and bulk, is critical. We introduced the Social Cost Vehicle Routing Problem: a mathematical optimization model to determine the right mix of formats of supplies in terms of routing and delivery.

115-1873 Environmental sustainability through waste management in humanitarian contexts

Virva Tuomala, Post Doc/Researcher, Hanken, Finland

Gyöngyi Kovács, Professor, HUMLOG Institute, Finland

Anna Aminoff, Assistant Professor, Hanken, Finland

Environmental sustainability is an emerging concept in humanitarian contexts. Through an extensive review of grey and academic literature and an empirical study, this paper provides a framework of theoretical and practical solutions for greening the humanitarian supply chain. Particularly procurement, local action, and collaboration are highlighted as recommended action.

Contributed Session

178	Tuesday, 09:45 AM - 11:15 AM, Celebration 13	Track: Teaching/Pedagogy in POM
	Contributed Session: Alternative Approaches in Teaching Operations Management	
	Chair(s): Cenk Caliskan	

115-1809 A Simple Algebraic Method for the Economic Production Quantity Model

Cenk Caliskan, Professor, Utah Valley University, United States

We demonstrate an approach to teach the EPQ model with backordering using only algebra and analytic geometry, which is applicable to any minimization or maximization problem with a continuously differentiable objective function. The proposed approach is a great pedagogical tool in teaching inventory management to students with less mathematical backgrounds.

115-2037 Teaching effectively (online)

Glen Schmidt, Professor, University of Utah, United States

Bo Van Der Rhee, Professor, Nyenrode University, Netherlands

Do students learn as much if the course is online vs. videoconferencing vs. in-person? Do students choosing pass-fail learn as much as if taken for a grade? What kinds of videos and problem sets and exercises are most effective? We relate some experiences related to these questions.

115-2072 Do Compressed MBA Courses Impact Student Engagement and Satisfaction?

Tuesday, 09:45 AM - 11:15 AM

William Swart, Professor, East Carolina University, United States
Diana Haytko, Professor, East Carolina University, United States
Christine Kowalczyk, Associate Professor, East Carolina University, United States
Thomas Robbins, Associate Professor, East Carolina University, United States
Ying Liao, Associate Professor, East Carolina University, United States

Some MBA programs feature 8-week classes that compress a full semester of information into the abbreviated time interval. We present the impact that this compression has had on student engagement and satisfaction in Marketing and Operations Management classes.

Invited Session

179	Tuesday, 09:45 AM - 11:15 AM, Celebration 14	Track: Service Operations
	Invited Session: Student Best Paper Competition 2	
	Chair(s): Benjamin Lawrence	

115-0823 When Harry Won't Meet Sally: Gender Disparity in Online Learning Platforms

Zhihan (Helen) Wang, Student, Ross School of Business, University of Michigan, United States
Jun Li, Associate Professor, University of Michigan - Ann Arbor, United States
Andrew Wu, Assistant Professor, University of Michigan - Ann Arbor, United States

Utilizing a large-scale, interaction-level dataset on Coursera, we uncover a noted gender disparity in learners' interaction with the teaching staff. Also, we show that receiving staff response in forum leads to significant improvement in course passing rate. Our results provide direct managerial implications to platform managers and course providers.

115-1027 A Multi-Treatment Forest Approach for Analyzing the Heterogeneous Effects

Minmin Zhang, Student, University of Texas at Dallas, United States
Guihua Wang, Assistant Professor, University of Texas Dallas, United States
Wallace Hopp, Professor, University of Michigan - Ann Arbor, United States
Michael Mathis, Assistant Professor, University of Michigan Medical School, United States

We develop a new approach called "MT forest" to estimate the heterogeneous effects of multiple treatments. We demonstrate the effectiveness of this approach using synthetic data and apply this new approach to a clinical setting to examine the effect of team familiarity on surgery duration.

115-1367 A Field Experiment on AI-Assisted Physicians

Ting Hou, Student, University of Science and Technology of China, China
Meng Li, Associate Professor, University of Houston, United States
Yinliang (Ricky) Tan, Associate Professor, University of Houston, United States
Huazhong Zhao, Associate Professor, City University of Hong Kong, China

In this study, we conduct a field experiment and examine the impact of AI strategies on service providers' adoption behavior. Our results indicate that AI smartness leads to higher adoption rates, while the effect of disclosure of information is contingent on the level of the assistant smartness.

115-2145 Towards Achieving Mental Health Equity in Underserved Communities: Evaluating the Potential of Mobile Apps

Yi Tang, Student, University of Minnesota, United States
Kingshuk Sinha, Professor, University of Minnesota, United States
Adam Moen, Founder and Principal, ., United States
Necati Ertekin, Assistant Professor, University of Minnesota, United States

We empirically investigate user usage behavior of a mental health mobile app and its impact on users' self-reported mental conditions. The results indicate that mobile apps can create capacity in a mental healthcare supply chain so as to reduce the disparities associated with gender, sexual orientation, and race-ethnicity.

Invited Session

180	Tuesday, 09:45 AM - 11:15 AM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Retail and Ecommerce	
	Chair(s): Luna (Xingyue) Zhang	

115-0306 BM Retailer's Exclusive Brand Introduction Decision and Consumer Showrooming: A Dual Channel Perspective

Prasenjit Mandal, Associate Professor, NEOMA Business School, France
Abhishek Roy, Assistant Professor, Temple University, United States

In a two-tier supply chain with a supplier and a brick-and-mortar (BM) retailer, we investigate how consumer showrooming interacts with the retailer's exclusive store brand strategy. Counterintuitively, the BM retailer benefits from consumer showrooming when it carries a store brand. The store brand strategy may lead to a 'win-win' outcome.

115-0458 Search Routes in Mobile Commerce

Luna (Xingyue) Zhang, Assistant Professor, University of Washington, United States
Raluca Ursu, Assistant Professor, New York University, United States
Elisabeth Honka, Assistant Professor, University of California, Los Angeles, United States
Yuliang Yao, Professor, Lehigh University, United States

Tuesday, 09:45 AM - 11:15 AM

We collect panel data from a mobile shopping app containing detailed information on consumer browsing for sandals over six months. We develop a sequential search model to quantify preferences, discovery costs, and search costs. Our results show that product discovery costs are five times lower than product search costs.

115-0856 The impact of "Shop & Scan" technology on buyer behavior

Ruifeng (Brett) Wang, Student, University of Maryland - College Park, United States

Martin Dresner, Professor, University of Maryland, United States

Yuliang Yao, Professor, Lehigh University, United States

Xiaodan Pan, Assistant Professor, Concordia University, Canada

Kevin Park, Assistant Professor, University of Dayton, South Korea

Using quasi-experimental data, we analyze how Shop & Scan technology impacted consumer foot traffic at locations of a major retail chain. Results show that this technology increased visit frequency, decreased dwell time in stores, differentially impacted minority consumers, and was associated with lower foot traffic at competitors.

115-2134 An expectation confirmation model (ECM): study of customers' continuance usage intention of smartphone banking applications

Nambirajan Thangasamy, Retired, Pondicherry University, India

Smartphone banking apps are applications provided to access banking services. Authors aim to look at antecedents that influence the customers to accept and improve their continuance usage intention of smartphone banking. A questionnaire survey was used to study 514 users. Results will be useful to improve banking service operations.

Invited Session

181 Tuesday, 09:45 AM - 11:15 AM, Coral Spring 1

Track: Emerging Topics in Operations Management

Invited Session: Emerging Topics in Operations Management VII

Chair(s): Yang Li

115-0516 Probabilistic Approximations for Network Revenue Management

Saied Samiedaloui, Assistant Professor, University of Alberta, Canada

Dan Zhang, Professor, University of Colorado Boulder, United States

Rui Zhang, Assistant Professor, University of Colorado Boulder, United States

We propose probabilistic approximations to capture the interactions among resources for network revenue management. The probabilistic approximations are stronger than SPL approximation in the sense that they lead to tighter upper bounds. Our numerical results also suggest that the probabilistic approximations lead to better control policies than the SPL approximation.

115-0899 Fairness in Pollution Regulation: The Polluter-Pays Principle Under Cap-and-Trade

Krishnan Anand, Associate Professor, University of Utah, United States

Francois Giraud-Carrier, Associate Professor, Weber State University, United States

Fairness in pollution regulation is an important and much-debated question, especially given multiple stakeholders with conflicting objectives. We develop a novel pollution-control mechanism that we use as a benchmark of fairness. We then assess the fairness of Cap-and-Trade and Taxes against this benchmark.

115-0973 Digital Goods Reselling: Implications on Cannibalization and Price Discrimination

Hongqiao Chen, Assistant Professor, Nanjing University, China

Ying-Ju Chen, Professor, Hong Kong University of Science and Technology, Hong Kong, China

Yang Li, Assistant Professor, Richard Ivey Business School, Canada

Xiaoquan Zhang, Professor, Tsinghua University, China

Sean Zhou, Professor, Chinese Univ of Hong Kong, Hong Kong, China

Resale of digital goods is often prohibited due to the concern of primary market cannibalization. Yet, we posit that resales can be an effective tool of managing heterogeneous demand if the digital goods can be sold with optimized usage allowance.

115-1324 Platform Governance in the Presence of Provider Competition: Do Regulations Boost Service Quality?

Xuan Zhao, Professor, Wilfrid Laurier University, Canada

Li Jiang, Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Xiaokai Wu, Post Doc/Researcher, Wilfrid Laurier University, Canada

We consider a setting where two platforms enforce service standards and set prices, based on which heterogeneous providers and consumers decide whether and which platform to join. We find that social-welfare maximizing regulations might actually downgrade the service standard.

Contributed Session

182 Tuesday, 09:45 AM - 11:15 AM, Coral Spring 2

Track: Emerging Topics in Operations Management

Contributed Session: Electric Vehicles

Chair(s): Mucahit Ozden

115-0118 Electric Vehicle Adoption Intention: An Empirical Study in China

Dingni Wang, Student, University of Warwick, United Kingdom

Mucahit Ozden, Post Doc/Researcher, University of Warwick, United Kingdom

Tuesday, 09:45 AM - 11:15 AM

An extended model using the Unified Theory of Acceptance and Use of Technology (UTAUT), integrating perceived risk, price value and policy incentives, was developed to predict customers' adoption intention of EVs. Quantitative data was collected from 348 valid surveys and analysed using the structural equation model (SEM).

115-1841 Real-time Optimal Charging Schedule and Routing Algorithm for Logistic Service Providers

Shalini Velappan, Assistant Professor, IIM Tiruchirappalli, India

Sabitha Devarajulu, Student, IIM Tiruchirappalli, India

In this research, we propose mixed-integer optimization model for real time optimal charging schedule and routing for electric vehicles to meet the ongoing demand of logistic service providers such as Fedex, DHL, Amazon and So on. In addition, we perform sensitivity analysis to evaluate several business scenarios and constraints.

115-1876 Fast-charging versus battery-swapping: a way-out or a dead-end?

Yudi Zhang, Student, University of Bristol, Great Britain

Xiaojun Wang, Professor, University of Bristol, United Kingdom

Bangdong Zhi, Lecturer, University of Bristol, United Kingdom

Existing electric vehicle manufacturers have invested significantly in developing efficient recharging services. Motivated by the ongoing debate on whether the fast-charging and battery-swapping services are way-outs or dead-ends, our research aims to explore whether and how the service provider should invest in these emerging charging services.

115-1877 Too late or too early: Optimal market entry strategy for battery-swapping service

Yudi Zhang, Student, University of Bristol, Great Britain

Xiaojun Wang, Professor, University of Bristol, United Kingdom

Bangdong Zhi, Lecturer, University of Bristol, United Kingdom

Electric vehicle commercial charging services are currently dominated by the fast-charging service. This study investigates the optimal market entry strategy for the battery-swapping service, a new market entrant that seeks to challenge the incumbent fast-charging service and redefine the growing electric vehicle charging service market.

Invited Session

183	Tuesday, 09:45 AM - 11:15 AM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Environmental Risk Management	
	Chair(s): Shirin Shahsavand	

115-0722 An Empirical Investigation of Facility-Level Operations and Disparities in Occupational Hazards in Minority Communities.

Abhinav Shubham, Student, Georgia Institute of Technology, United States

Ravi Subramanian, Professor, Georgia Tech, United States

Racial and ethnic factors, coupled with gaps in equal employment opportunities and differing facility-level operational characteristics, may contribute to disparities in exposure to occupational safety hazards. We empirically investigate the occupational safety hazards associated with facility-level operational choices in host communities with differing demographics.

115-1083 An Operational Perspective on Microfinancing in Developing Countries

Opher Baron, Professor, University of Toronto, Canada

Elaheh Rashidinejad, Student, Rotman School of Management, Canada

Gonzalo Romero, Assistant Professor, University of Toronto, Canada

We compare two microfinancing setups in developing countries where an entrepreneur borrows loan to start a business. The entrepreneur faces a Newsvendor problem with finance and effort. We characterize conditions under which community bank, by applying social pressure on the entrepreneur to repay all debt, improves individual and social welfare.

115-1600 Decarbonization Logistics: Does the Truth Hurt?

Qingyun Zhu, Assistant Professor, University of Alabama Huntsville, United States

Yanji Duan, Assistant Professor, University of North Florida, United States

Joseph Sarkis, Professor, Worcester Polytechnic Institute, United States

Retailers decarbonize logistics to mitigate environmental and reputational risks. Blockchain and decarbonization, each can be expensive and complex to manage. We examine how blockchain-supported carbon offset information provision and shipping options with different cost implications impact consumer perceptions toward retailers and logistics providers.

115-1659 Breaking the Invisible Cage: Investigating the Gender Wage Gap in Gender-Blind Online Platforms

Li Ding, Student, Georgia Institute of Technology, United States

Basak Kalkanci, Associate Professor, Georgia Institute of Technology, United States

Our study seeks to investigate differences in self-evaluation biases between genders as potential contributors to the gender wage gap in online platforms, and explore potential strategies to mitigate the gap. We leverage a gender-blind online labor platform and conduct a two-phased field experiment.

115-1752 Mitigating environmental risk of apparel supply chains by clothing the loop

Shirin Shahsavand, Student, Washington State University, United States

Yixuan Xiao, Assistant Professor, Washington State University, United States

Kevin Mayo, Assistant Professor, Washington State University, United States

Tuesday, 09:45 AM - 11:15 AM

Charles Munson, Professor, Washington State University Pullman, United States

The apparel industry contributes significantly to annual carbon emissions and overflowing landfill, which may risk business with younger, environmentally conscious consumers. We develop a stylized model to investigate how apparel firms can mitigate their environmental impact by offering end-of-life/end-of-use apparel collection programs and providing incentives to encourage consumers to participate.

Invited Session

184

Tuesday, 09:45 AM - 11:15 AM, Blue Spring 2

Track: Empirical Research in Operations Management

Invited Session: Empirical Research in Healthcare Operations

Chair(s): Chia-Chun Yang

115-1037 Analyzing Professional Ethics of Physicians Using Online Patient Reviews: A Machine Learning Approach

Kanix Wang, Assistant Professor, University of Cincinnati, United States

Feng Mai, Assistant Professor, Stevens Institute of Technology, United States

Jay Shan, Assistant Professor, University of Miami, United States

David Zhang, Assistant Professor, Lehigh University, United States

Xiaosong (David) Peng, Professor, Lehigh University, United States

To study how patient complaints contribute to the regulation of ethical conduct in medical profession, we introduce a novel language-model-based measure of physicians' professional ethics, grounded in ethical theories. Empirical findings from 1.5 million patient reviews suggest that our measures can help predict both future disciplinary actions and pay-to-prescribe tendency.

115-1242 Virtuous Spillover Effects of Quality Penalties on the Continuity of Health Care

Aishwarya Deore, Assistant Professor, Georgetown University, United States

Ranjani Krishnan, Professor, Michigan State University, United States

Anand Nair, Professor, Michigan State University, United States

We examine whether a quality regulation that penalized hospitals for excess readmissions has implications for continuity of care through direct and indirect spillovers. We conduct difference-in-differences analyses using patient-level data and the empirical strategy utilizes the nature of the hospital production function which is organized by medically related specialties.

115-1315 Effect of Shift Structure on Service-Worker Fatigue: Evidence from Emergency Department Caregivers

Chia-Chun Yang, Student, University of Cincinnati, United States

Craig Froehle, Professor, University of Cincinnati, United States

Elizabeth Leenellett, Professor, University of Cincinnati, United States

Service worker fatigue is known to harm work quality, but what is unknown is how shift structures influence fatigue. Using primary data from emergency caregivers, we examine how shift duration and timing drive fatigue, and how the fatigue-reduction efficacy of workers' recovery time is affected by their between-shift activities.

Invited Session

185

Tuesday, 09:45 AM - 11:15 AM, Rainbow Spring 1

Track: Empirical Research in Operations Management

Invited Session: Empirical Research in Supply Chain Management

Chair(s): Daesik Hur

115-1234 Strategic fit in the configuration of global production networks

Gwen Louis Steier, Post Doc/Researcher, University of South Carolina Aiken, Germany

Fabian Klinkner, Student, Institute of Technology Management, University of St. Gallen, Switzerland

Sina Peukert, Post Doc/Researcher, wbk Institute for Production Science, Karlsruhe Institute of Technology, Germany

Gisela Lanza, Professor, Karlsruhe Institute of Technology, Germany

The configuration of global production networks according to the strategy and the corporate environment, termed as strategic fit, is a complex challenge in practice. In this contribution, causal relations between network structure, strategic goals and environmental factors are presented in a conceptual model and validated with an empirical mixed-methods approach.

115-1328 Incentivizing Suppliers via Opportunity Cost: Evidence from Commercial Real Estate

Alper Nakkas, Assistant Professor, University of Texas Arlington, United States

Jayarajan Samuel, Assistant Professor, The University of Texas at Arlington, United States

Sriram Villupuram, Associate Professor, University of Texas Arlington, United States

Commercial real estate spaces are a critical link in a business's supply chain. Government regulations play an important role in keeping these links robust. Using a unique data set of commercial rental information in four metropolitan areas in North America we assess the impact of government incentives on rental contracts.

115-1627 Supply chain resilience. How supply networks react to product-level shocks.

James Zhang, Post Doc/Researcher, Eindhoven University of Technology, Netherlands

Shaunak Dabadghao, Assistant Professor, Technische Universiteit Eindhoven, Netherlands

Maximiliano Udenio, Associate Professor, KU Leuven, Belgium

In this paper, we use a rich secondary dataset on product-level import/export relationships to analyse the evolution of the supply chain network as a reaction to shocks, a.o., the imposition of new tariffs and entry restrictions at the HTS code level.

Tuesday, 09:45 AM - 11:15 AM

115-2068 Quantification of the Strategic Fit Between Process Choice Criteria and Manufacturing Systems

Vishwas Dohale, Student, National Institute of Industrial Engineering, Mumbai, India

This study formulated an integrated framework comprising Delphi, Voting AHP, and Bayesian network for selecting the best-suited production system by quantifying the strategic fit between process choice criteria (PCC) and manufacturing systems. Total 22 cases within traditional and additive manufacturing systems are evaluated to understand the benchmark level of PCC.

Invited Session

186

Tuesday, 09:45 AM - 11:15 AM, Rainbow Spring 2

Track: Operational Excellence

Invited Session: Behavioral impacts of digital technologies on improvement processes and routines

Chair(s): Andrea Furlan

115-0069 Providing real-time feedback to workers: A field experiment in a digitalized production setting

Daniel Kwasnitschka, Student, ETH Zürich, Switzerland

Henrik Franke, Post Doc/Researcher, Swiss Federal Institute of Technology Zurich, Switzerland

Torbjørn Netland, Assistant Professor, Eth Zurich, Switzerland

Using a large-scale and multi-site field experiment, we analyze 29.669 machine statuses and study the productivity effects of providing workers real-time performance feedback via a smartwatch technology. We allocate several combinations of different feedback to workers, providing novel theoretical insights on the combination of feedback framing and reference points.

115-0587 How employees solve problems in digital contexts?

Ambra Galeazzo, Professor, Università Degli Studi Di Padova, Italy

Andrea Furlan, Professor, Padova University, Italy

Michela Carraro, Student, University of Padova, Italy

According to routine dynamics literature, employees combine reflective, mindful actions with routinized, mindless ones while performing their routines. Based on a field experiment, our paper investigates whether and why employees shift to reflective actions when problems occur. Furthermore, do digital technologies affect this shift in problem solving?

115-1156 The learning perspectives of digital lean manufacturing

Daryl Powell, Professor, Norwegian University of Science And Technology, Norway

In this paper, we explore the digital enhancement of lean practices to accelerate learning capabilities within and across lean organizations. We draw on practical insights from a multiple case study and provide recommendations for manufacturing companies embarking on their digital lean Journey.

115-1607 How Lean and Industry 4.0 affects production workers? Testing competing models

Alejandro Frank, Associate Professor, Federal University of Rio Grande do Sul, Brazil

Timothy Sturgeon, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Guilherme Benitez, Student, Federal University of Rio Grande do Sul, Brazil

Giuliano Marodin, Associate Professor, University of South Carolina, United States

We test competing models for the relationship between Lean and Industry 4.0 with workers' performance and employment. We use a randomized sampling from the Brazilian National Confederation of Industries. We analyze 415 companies through regression models, showing how Lean, Industry 4.0, and people are related.

Invited Session

187

Tuesday, 09:45 AM - 11:15 AM, Barrel Spring 1

Track: POM-Marketing Interface

Invited Session: Marketing and Operations of the Online Platform and Marketplaces

Chair(s): Bo Zhou Buqing Ma

115-1502 Buy Now, Pay Later Competition Under Competitive Market

Buqing Ma, Assistant Professor, University of Science and Technology of China, China

Yi Zhu, Associate Professor, University of Minnesota, United States

we investigate how the Buy Now Pay Later plan affects the product competition, retailers' and lenders' profits, and consumer surplus. We find that compared to the monopolistic lender, the competition between two lenders can soften the product competition (i.e., higher retail prices).

115-1768 Self-Preferencing in E-commerce Marketplaces: The Role of Sponsored Advertising and Private Labels

Fei Long, Assistant Professor, University of North Carolina Chapel Hill, United States

In recent years, e-commerce platforms have begun to leverage private label and sponsored advertising to generate additional revenue. We study when and why a platform may seek to give preference to its private label in sponsored advertising, and what the implications of this are for consumers and third-party sellers.

115-2010 Role of Aggregator Platforms in Sustainability of Social Enterprises

Vinaysingh Chawan, Assistant Professor, Indian Institute of Management Indore, India

Bhavani Shankar Saripalli, Associate Professor, Indian Institute of Management Indore, India

Tuesday, 09:45 AM - 11:15 AM

Ensuring sustainability and profitability of small scale social enterprises is possible via aggregator platforms. The platforms help social enterprises in overcoming the uncertainties in supply and demand. It further helps in promoting the artisan created product differentiation and facilitates marketing by aggregating products to serve demand.

115-2050 How Does Best Seller Recommendation Shape the Ecosystem of an Online Marketplace?

Farzad Fathi, Student, University of Maryland, United States

Yi Xu, Associate Professor, University of Maryland, United States

Bo Zhou, Associate Professor, University of Maryland, United States

This paper studies the impact of the best seller recommendation, a widely used popularity-based system, on consumers, sellers, and the online marketplace. The results highlight the importance of accounting for the strategic response of the sellers before an online marketplace implements the best seller recommendation system.

Invited Session

188	Tuesday, 09:45 AM - 11:15 AM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Advances in Inventory Theory	
	Chair(s): Melvin Drent	

115-0541 Stochastic Inventory Control with Non-Stationary Demand

Lotte van Hezewijk, Student, Eindhoven University of Technology, Netherlands

Nico Dellaert, Associate Professor, Eindhoven University of Technology, Netherlands

Willem Van Jaarsveld, Associate Professor, Eindhoven University of Technology, Netherlands

We propose a demand model that can be used to generate realistic non-stationary demand scenarios. The suitability of this demand model is illustrated by evaluating the performance of improved inventory control policies based on this model in a stochastic inventory control problem with fixed ordering costs and lead time.

115-0974 Multi-Echelon Inventory Optimization using Deep Reinforcement Learning

Kevin Geevers, Analytics Consultant, ORTEC, Netherlands

Lotte van Hezewijk, Student, Eindhoven University of Technology, Netherlands

Martijn Mes, Professor, Twente University Enschede, Netherlands

This paper studies the applicability of a deep reinforcement learning approach to three different multi-echelon inventory systems, with the objective of minimizing the holding and backorder costs. We conduct an extensive literature review to map the current applications of reinforcement learning in multi-echelon inventory systems and implement a PPO algorithm.

115-1908 Projected Inventory Level Policies for Lost Sales Inventory Systems: Asymptotic Optimality in Two Regimes

Willem Van Jaarsveld, Associate Professor, Eindhoven University of Technology, Netherlands

Joachim Arts, Professor, University of Luxembourg, Luxembourg

We consider the canonical periodic review lost-sales inventory system with lead-times and i.i.d. demand under the average cost criterion. We introduce a new policy that places orders such that the expected inventory level at the time of arrival of an order is at a fixed level and study asymptotic optimality.

115-2030 Automating Due Diligence

Shawn Bhimani, Assistant Professor, Northeastern University, United States

We present initial findings from our analysis of thousands of buyer supplier relationships for social responsibility risk using automated tools such as machine learning and NLP. This provides insights based on an ongoing paradigm shift in due diligence and governance.

Invited Session

189	Tuesday, 09:45 AM - 11:15 AM, Rock Spring	Track: POM-Economics Interface
	Invited Session: OM-Economics Interface: innovative Applications	
	Chair(s): Tim Kraft Manish Tripathy	

115-0110 Trust-and-evaluate: A Dynamic Non-monetary Mechanism for Internal Capital Allocation

Shivam Gupta, Assistant Professor, University of Nebraska Lincoln, United States

Saurabh Bansal, Associate Professor, Penn State University University Park, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

To stay competitive, firms regularly invest in internal capital projects and request proposals from managers for funding. Managers are better informed about the costs and benefits of their projects, and can use this information strategically to secure funding. We propose a truthful, near-optimal dynamic nonmonetary mechanism for this problem.

115-0459 The influence of machine learning techniques on airlines' on-time performance

Rang Gong, Student, Ohio State University, United States

Xiang Wan, Assistant Professor, Ohio State University, United States

Tuesday, 09:45 AM - 11:15 AM

We explore how airlines use machine learning (ML) techniques to improve their operational performance through empirical analyses. Although AI-based ML approaches are expected to enhance on-time performance, it remains unclear when the benefit of ML techniques can be observed, how much it is, and what mechanisms to achieve improved performance.

115-1116 Competitive Implications of Spectrum Sub-Leasing on Price, Quality and Sourcing Decisions

Manish Tripathy, Post Doc/Researcher, Sauder School of Business, UBC, Canada

Tim Kraft, Associate Professor, 2801 Founders Dr, United States

H. Sebastian Heese, Professor, North Carolina State University, United States

We study a duopoly cellular network market, wherein two Mobile Network Operators (MNOs) compete on price and quality, but also, potentially sub-lease spectrum to a Mobile Virtual Network Operator (MVNO). We analyze the impact of an MVNO on market factors such as quality of service, service price, and market structure.

115-1478 Business Operations Redesign and Working-Condition Improvement in Agribusiness

Dongsheng Li, Student, Penn State University University Park, United States

Saurabh Bansal, Associate Professor, Penn State University University Park, United States

Karthik V. Natarajan, Associate Professor, University of Minnesota, United States

Phillip Coles, Associate Professor, Lehigh University, United States

We investigate how business operations can be redesigned to improve both a firm's performance and workers' working conditions in agribusiness. We provide a multi-dimensional decision support system based on the optimal strategies of our model. We further calibrate our model using industry data.

Contributed Session

190 Tuesday, 09:45 AM - 11:15 AM, Regency Ballroom Q Track: Revenue Management and Pricing

Contributed Session: Spatial and Network Revenue Management

Chair(s): Sven Müller Asrar Ahmed

115-0004 Spatial Revenue Management in Public Transport

Sven Müller, Professor, Rwth Aachen University, Germany

Lorena Reyes, Post Doc/Researcher, OvGU, Germany

We present approaches to designing a counting zones tariff system in public transportation. The approaches are able to account for different spatial patterns of the resulting zones. We present results of a case study using real world data from the San Francisco Bay Area.

115-1128 Capacity Pooling for Network Revenue Management

Asrar Ahmed, Student, Indian School of Business, India

Milind Sohoni, Professor, Indian School of Business, India

Sumit Kunnumkal, Assistant Professor, Indian School of Business, India

Raja Gopalakrishnan, General Manager, INDIAN RAILWAYS, India

Motivated by the resource allocation rule used by a large passenger rail operator, we explore capacity pooling as a control mechanism. We present a dynamic programming formulation, highlight pooling benefits, develop approximate solution and provide structural insights. We numerically demonstrate the performance gains of our solution.

115-1461 Degeneracy is OK: Logarithmic Regret for Network Revenue Management with Indiscrete Distributions

Jiashuo Jiang, Assistant Professor, Hong Kong University of Science and Technology, China

Will Ma, Assistant Professor, Columbia University, United States

Jiawei Zhang, Professor, New York University, United States

We study the classical Network Revenue Management (NRM) problem with accept/reject decisions and T IID arrivals. We consider a distributional form where each arrival must fall under a finite number of possible categories. We develop new algorithms achieving logarithmic regret without assuming non-degeneracy that is usually required by previous analysis.

Invited Session

191 Tuesday, 09:45 AM - 11:15 AM, Regency Ballroom O Track: Retail Operations

Invited Session: Emerging Topics in Retail Operations

Chair(s): Hang Ren

115-0423 Freemium Pricing of Conspicuous Digital Goods in Free-to-play Multiplayer Games

Hang Ren, Assistant Professor, George Mason University, United States

Esma Koca, Lecturer, Imperial College London, United Kingdom

Ioannis Bellos, Associate Professor, George Mason University, United States

Lifei Sheng, Assistant Professor, University of Houston Clear Lake, United States

Many free-to-play multiplayer games offer digital goods at a monetary price and a price in virtual currency which is earned with playtime. These goods do not provide gameplay advantages but furnish unique cosmetics. In a game-theoretic framework, we show that players' exclusivity-seeking behavior can support the publisher's freemium offering.

115-0777 Selling to time-inconsistent consumers in the presence of consumer-to-consumer secondary market

Chen Pang, Student, Hong Kong Polytechnic Univ, Hong Kong, China

Tuesday, 09:45 AM - 11:15 AM

Li Jiang, Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Gang Li, Professor, Xi'an Jiaotong University, China

The time difference between immediate payment and delayed payoff gives rise to time-inconsistent purchases and overestimation of current utilities by consumers. This paper investigates the effect of time inconsistency on the pricing strategy of a monopolist who sells different versions of new products with the existence of second-hand transactions intra-consumers.

115-0779 Local Trade-in vs. Cross-brand Trade-in Program in Vertically Differentiated Market

yi Tong, Student, Xi'an Jiaotong University, United States

Gang Li, Professor, Xi'an Jiaotong University, China

Guangzhi Shang, Associate Professor, Florida State University, United States

We build a two-period model to consider one competition between an incumbent and an entrant where the entrant offers the cross-brand trade-in program (CTP, exchange product A for a cheaper product B) to poach the incumbent's customers. However, we find that CTP can benefit the incumbent considering consumers' forward-looking behavior.

115-1813 The Warehouse of the Future for CPGs

Miguel Rodriguez Garcia, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Maria Jesus Saenz, Associate Professor, Massachusetts Institute of Technology, United States

Eva Ponce-Cueto, Associate Professor, Massachusetts Institute of Technology, United States

This paper identifies the key elements that will define the warehouse of the future for CPGs. This work considers how warehouse design and operations are affected by fast technological development and the move towards omnichannel retailing. The discussion focuses on the tradeoffs between efficiency, complexity and flexibility in the warehouse.

Invited Session

192	Tuesday, 09:45 AM - 11:15 AM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: AI and Disruptive Technologies	
	Chair(s): Jason Wu	

115-0674 Should the Seller Offer Multiple Shipping Speed Options in Online Market Bargaining?

Wen Zhang, Assistant Professor, Baylor University, United States

Guihua Wang, Assistant Professor, University of Texas Dallas, United States

We empirically study online marketplace bargaining and find that the buyer is more likely to concede when the seller offers multiple shipping speed options. We also analyze the heterogeneity effects using generalized random forests.

115-1170 Trust and Trustworthiness: Experiments with Artificial Intelligence (AI) Agents

Jason Wu, Post Doc/Researcher, University of Houston, United States

Kay Yut Chen, Professor, University of Texas Arlington, United States

Yan Wu, Associate Professor, San Jose State University, United States

Lei Hua, Assistant Professor, University of Texas At Tyler, United States

The trust game, a simple two-person economic exchange, has been extensively used as experimental measures for trust and trustworthiness of individuals. Here, we develop deep neural network-based artificial intelligence (AI) agents to participate a series of experiments based upon the trust game.

115-1677 How human-AI collaboration impacts demand planning

Elena Revilla, Professor, IE Universidad, Spain

Maria Jesus Saenz, Post Doc/Researcher, MIT, United States

Jafar Namdar, Post Doc/Researcher, Massachusetts Institute of Technology, United States

In the context of AI-demand planning under Human-AI collaboration, this paper conducts experiments with 1800 SKUs. We demonstrate that when uncertainty is low, demand forecasting accuracy mediates the relationship between the Human-AI demand forecasting method and inventory. When uncertainty is high, the effect of algorithm aversion impedes this mediation.

Invited Session

193	Tuesday, 09:45 AM - 11:15 AM, Silver Spring 1	Track: Data Science and Analytics
	Invited Session: Data Analytics for Electrical Vehicle Systems Design	
	Chair(s): Ibrahim Capar	

115-0148 Pricing and Producing Green Products: The Case of Subsidy Termination and Competition

Lingling shi, Student, UT Dallas, United States

Metin Cakanyildirim, Professor, University of Texas Dallas, United States

Suresh Sethi, Professor, University of Texas Dallas, United States

Government subsidies help industries achieve green product adoption targets. However, subsidies will terminate. Accounting for this termination and the interplay among subsidy, learning-by-doing and competition, we develop a two-period Stackelberg-Nash game between the government and the manufacturer(s). We provide equilibrium prices, production quantities, optimal subsidy amounts and managerial insights.

115-0149 Stochastic Network Design for Blockchain-based Electric Vehicle Charging Payment Systems

Tuesday, 09:45 AM - 11:15 AM

Zhangchen Hu, Student, University of Massachusetts Amherst, United States
Heng Chen, Assistant Professor, University of Nebraska Lincoln, United States
Senay Solak, Professor, University of Massachusetts Amherst, United States

Environmental awareness has stimulated the increasing popularity of electric vehicles. However, there are two critical challenges to the widespread adoption of EVs: range anxiety and privacy concerns. To help deal with such challenges, we propose a stochastic optimization approach to establish a Blockchain-based network payment system for suppliers and users.

115-0165 Simulation-based ADP Charging Policy For EV Fleets With Heterogeneous Vehicles

Ehsan Mahyari, Student, University of Alabama Tuscaloosa, United States
Nickolas Freeman, Associate Professor, University of Alabama Tuscaloosa, United States

A simulation-based approximate dynamic programming approach is developed to design charging policies for charging depots serving fleets of heterogeneous electric vehicles with the goal of minimizing total charging costs and maximizing service reliability in light of the trade-offs that Charging-as-a-Service providers face.

115-1812 Considering Capacity in Designing Electrical Vehicle Chargers

Ibrahim Capar, Assistant Professor, Bowling Green State University, United States
Ozgur Araz, Professor, University of Nebraska Lincoln, United States
Ismail Capar, Associate Professor, Texas A&M University College Station, United States

In this research, we present a network design framework to improve the infrastructure for EVs with quality of service constraints. The model formulation allows assessing capacity and quality of service trade-offs and support service network design decisions. We the performance based on both computational efficiency and solution quality.

Invited Session

194	Tuesday, 09:45 AM - 11:15 AM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Managing inventory in food systems	
	Chair(s): Nina Mayer	

115-0268 Reducing Third-party Storage Costs Using Shorter Production-runs in a Food Packaging Company: A Trade-off Analysis

Ram Roy, Senior Lecturer, Eastern Institute of Technology, Napier,, New Zealand

A food company observed that production costs increase when production run-times are shortened, while third-party storage costs decrease but the company is undecided about which way to go. A trade-off analysis was conducted to determine whether savings in storage costs significantly outweigh rise in production costs for different meals types.

115-0490 Pricing, advertising, and inventory replenishment strategies in a three-echelon food supply chain for growing items.

Makoena Sebatjane, Lecturer, University of Pretoria, South Africa

Most food production systems commence with the rearing of live growing items, followed by the processing of these items into packaged, ready-for-sale food products, and finally, the food products are sold in retail outlets. This paper will investigate the impact of advertising and pricing strategies on food supply chains.

115-0855 Collaboration Mechanisms for Food Waste Reduction in Supply Chains Considering Shelf-Life Variability and Behavioral Aspects

Nina Mayer, Student, Kuehne Logistics University, Germany
Sandra Transchel, Professor, Kuehne Logistics University, Germany

Reducing food waste through improved inventory management in fresh food supply chains requires the consideration of product shelf-life variability and the interest alignment of the different supply chain partners. Using a serious game, we study how and to what extent collaboration mechanisms can reduce food waste, accounting for behavioral aspects.

115-1480 The impact of standardization on the effectiveness of reusable packaging systems

Sandra Transchel, Professor, Kuehne Logistics University, Germany

Reusable primary packaging for food products is becoming increasingly important. However, a particular challenge for the widespread implementation of reusable systems is an efficient logistics. We study the impact of standardization on the efficiency and effectiveness of reusable packaging systems.

Invited Session

195	Tuesday, 09:45 AM - 11:15 AM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Collaboration, Incentives and Innovation	
	Chair(s): Zhi Chen	

115-0287 Advising Entrepreneurs: Optimal Recommendation of Alternatives

Zeya Wang, Student, Georgia Institute of Technology, United States
Morvarid Rahmani, Associate Professor, Georgia Institute of Technology, United States
Karthik Ramachandran, Professor, Georgia Institute of Technology, United States

Facing emergent business challenges, entrepreneurs often seek guidance from experienced advisors. When there are multiple alternatives that could potentially solve the entrepreneur's problem, advisors can lead the entrepreneur's exploration by choosing which alternative(s) to suggest and in what sequence.

Tuesday, 09:45 AM - 11:15 AM

115-0677 Mergers between On-Demand Service Platforms: The Impact on Consumer Surplus and Labor Welfare

Xiaogang Lin, Lecturer, Guangdong University of Technology, China

Tao Lu, Assistant Professor, University of Connecticut, United States

Xin Wang, Assistant Professor, Hong Kong University of Science & Tech, Hong Kong, China

We study the impact of mergers between on-demand service platforms on consumer surplus and labor welfare. We incorporate two into the study: the cross-side network effect and the pooling of agents and consumers. We find that these two features can make a merger beneficial to all parties under certain conditions.

115-0879 Fairness Concerns in Heterogeneous Teams: Optimal Team Composition and Contract

Lin Chen, Student, INSEAD, France

Antoine Desir, Assistant Professor, INSEAD, France

Guillaume Roels, Professor, INSEAD, France

When managing heterogeneous teams, a manager may choose to over-use the most efficient member, potentially giving rise to inequalities, or require more even involvement at the cost of lower output. Is there a fairness-efficiency tradeoff? Our analysis demonstrate that the best team contract could be envy- and guilt-free.

115-1451 Dynamic Development Contests

Sina Moghadas Khorasani, Assistant Professor, University of Dayton, United States

Ersin Korpeoglu, Associate Professor, University College London, United Kingdom

Vish Krishnan, Professor, University of California San Diego, United States

We derive optimal dynamic development contests with enriched rank-based incentives and carefully-tailored information design that can help organizations leverage their suppliers for their development projects while seeking to minimize project lead time by stimulating competition among them.

Invited Session

196	Tuesday, 09:45 AM - 11:15 AM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Socially Responsible Supply Chains	
	Chair(s): Natalie (Ximin) Huang Sining Song	

115-0993 The Effect of Fuel Tax on Firms' Performance

Fahimeh Chomachaei, Assistant Professor, University of Massachusetts Boston, United States

Davood Golmohammadi, Associate Professor, University of Massachusetts Boston, United States

Robert Klassen, Professor, Ivey Business School, Western University, Canada

There is a growing concern regarding CO2 emissions. One way to decrease carbon levels from human activities is through a fuel tax. The effect of fuel taxes on firms' performance is unclear. We empirically investigate the impact of the fuel tax on the performance of the U.S. automotive industry.

115-1062 Inventory System with Demand-Dependent Returns: Stationary Analysis and Approximations

Zhijie Tao, Associate Professor, Shanghai University of Finance and Economics, China

Xuefeng Gao, Associate Professor, Chinese Univ of Hong Kong, Hong Kong, China

Sean Zhou, Professor, Chinese Univ of Hong Kong, Hong Kong, China

Chenxi SUN, Student, The Chinese University of Hong Kong, Hong Kong, China

We study a single-product, infinite-horizon periodic-review inventory system with random demand and product returns. The quantity of returned products each period depends on the historical demands. We propose a simple heuristic called forecast-adjusted base-stock policy with a constant base-stock level and develop simple approximations of the optimal base-stock level.

115-1215 Closing the loop for plastic in high-quality applications

Moritz Jäger-Roschko, Student, Kuehne Logistics University, Germany

Moritz Petersen, Assistant Professor, Kuehne Logistics University, Germany

Maria Besiou, Professor, Kuehne Logistics University, Germany

We analyze the recycling supply chain of plastic for high-quality applications. Based on 49 expert interviews, we observe a severe misalignment of recycled plastic's supplied and demanded quality. We show how OM can help to increase supply quality and stability, relax manufacturers' requirements and increase trust between both sides.

115-1676 Shared Supplier Capacity as a Barrier to Socially Responsible Sourcing

Jacob Chestnut, Assistant Professor, Cornell University, United States

Ravi Anupindi, Professor, University of Michigan Ann Arbor, United States

This experimental project considers the role of buyer behavior (e.g., time pressure, low margin, near delivery specification changes) in their supplier's performance along the dimension of social sustainability (forced OT, child labor, unauthorized outsourcing, etc.). We attempt to understand the relevant features (contractual/non-contractual) that suppliers use when creating preference rankings

Invited Session**199**

Tuesday, 11:30 AM - 01:00 PM, Celebration 1

Track: Agriculture and Food Supply Chains

Invited Session: **Improving Food Safety and Reducing Waste**

Chair(s): John Lowrey Chenghuai Li

115-1105 Inducing effort and adoption of agriculture innovation from risk-averse farmers

Lingxiu Dong, Professor, Olin Business School, Washington Univ., United States

Jie Ning, Associate Professor, Case Western Reserve University, United States

Ruiping Ke, Student, Olin Business School, United States

It is challenging to induce risk-averse farmers to adopt agriculture innovations that are inherently risky and require set-up effort. We propose a novel debt-like contract to address this challenge. We investigate how this contract incentivizes a farmer to exert effort and provide conditions under which it yields a win-win outcome.

115-1518 Uncovering the Impact of Food Safety Regulations on the Food Logistics Industry

Abhay Grover, Student, University of Maryland - College Park, United States

Food safety regulations affect food industry in several ways, yet its intersection with the food logistics industry is under-examined. We explore the case of Sanitary Transportation of Food Rule 2018 and develop an understanding of stakeholders' evolved roles including brokers, shippers, carriers, and receivers. We further identify challenges and solutions.

115-1945 Health Coverage and Farmworker Productivity

Zach Rutledge, Assistant Professor, Michigan State University, United States

John Lowrey, Assistant Professor, Northeastern University, United States

Timothy Richards, Professor, Arizona State University, United States

Agricultural work is notoriously demanding, and one of the most dangerous in terms of long-term health impacts working in the fields over long periods of time. We find that wages, productivity, and job duration are all positively related to the incidence of healthcare coverage among agricultural workers.

115-2043 Determining Maximum Shipping Age Requirements for Shelf Life and Food Waste Management

Arzum Akkas, Assistant Professor, Boston University, United States

Dorothee Honhon, Associate Professor, University of Texas Dallas, United States

Products approaching the end of their shelf lives are a major contributor to food waste. We offer a framework for manufacturers to determine maximum -shipping-age thresholds, which offer by up to 8.7% improvement in profits and 14.7% reduction in food waste compared to the one-size-fits-all approach practiced at our collaborator.

Invited Session**200**

Tuesday, 11:30 AM - 01:00 PM, Celebration 2

Track: Behavioral Operations Management

Invited Session: **Current Trends in Behavioral Operations Management**

Chair(s): Hasti Rahemi

115-0187 The Impact of Secondary Markets on Selling Blind Boxes with Set Bonuses

Chaolin Yang, Associate Professor, Shanghai Univ. of Finance and Economics, China

Yinbo Feng, Assistant Professor, Shanghai University of Finance and Economics, China

Chenxi SUN, Student, The Chinese University of Hong Kong, Hong Kong, China

We compare the selling of blind boxes in two settings, with and without a secondary market. We prove that with the secondary market, the firm's problem is a principal-agent problem. We use a linear program and its dual problem to solve the secondary market equilibrium and the firm's profit.

115-0192 A Behavioral Study of Self-Other Adoption Discrepancies in Explainable AI (XAI)

Fernanda Bravo, Assistant Professor, UCLA Anderson School of Management, United States

Zezhen (Dawn) He, Student, University of Rochester, United States

Yaron Shaposhnik, Assistant Professor, Simon Business School, United States

Leon Valdes, Assistant Professor, University of Pittsburgh, United States

In this work, we conduct behavioral experiments to study whether the party that is affected by a user's decision (self vs. other) impacts the user's adoption of ML recommendations. In addition, we study whether the presence vs. absence of explanations—commonly touted to increase ML adoption moderates our results.

115-0497 An Experimental Analysis to Understand the Causes of Developing Biased Machine Learning Algorithms by Developers

Mohammadreza Shahsahebi, Student, Haskayne School of Business, Canada

Osman Alp, Associate Professor, University of Calgary, Canada

Alireza Sabouri, Assistant Professor, University of Calgary, Canada

Justin Weinhardt, Associate Professor, Haskayne School of Business, Canada

There are many anecdotal examples and empirical studies that show the tendency of machine learning algorithms to yield biased results towards one or more disadvantaged groups in the society. We discuss the results of a behavioural experiment designed to understand the root causes of developing biased algorithms by the developers.

Tuesday, 11:30 AM - 01:00 PM

115-0751 The influence of mental features on distracted driving behaviors: A Perspective of Two Age Groups

Setareh Daneshgar, Student, Personal, United States

Suman Niranjani, Assistant Professor, University of North Texas, United States

Timothy Hawkins, Associate Professor, University of North Texas, United States

Priyali Rajagopal, Associate Professor, University of North Texas, United States

Janeth Gabaldon, Student, University of North Texas, United States

This paper explores the role of drivers' stress, anxiety, mental workload, and mind wandering on distracted driving behavior for two different generations who are younger than 24 and older than 50 years old. The results of this study suggest drivers' mental features have direct impacts on DDB for both groups.

115-1263 Leveraging the Internet of Things and an understanding of human behavior in condition-based preventive maintenance

Mateus do Rego Ferreira Lima, Student, The Ohio State University, United States

Elliot Bendoly, Professor, Ohio State University, United States

We investigate settings where the Internet of Things augments condition-based preventive maintenance. Inspired by field case data and on-site observations, we observe work behaviors that undermine the full potential of this technical benefit and consider mitigation options. We delve into these issues through the use of a multimethod empirical perspective.

Invited Session

201

Tuesday, 11:30 AM - 01:00 PM, Celebration 3

Track: Healthcare Operations Management

Invited Session: **Analytics in Healthcare Operations**

Chair(s): Alireza Boloori

115-0174 Data-Driven Incentives for Repeated Principal-Agent Models with Hidden Rewards: Oracle Agent

Ilgin Dogan, Student, University of California, Berkeley, United States

Anil Aswani, Associate Professor, University of California Berkeley, United States

Max Shen, Professor, University of California Berkeley, United States

We design data-driven incentives for an unexplored setting of repeated principal-agent games where agent plays its optimal policy with rewards unobservable to principal. Our framework, which comprises a consistent estimator for a non-parametric agent model and a bandit policy attaining low regret to principal, is applicable to medical adherence incentives.

115-0293 Statistical Characterization of Patient Response to Offered Access Delays Using Healthcare Transactional Data

Esma Gel, Professor, University of Nebraska Lincoln, United States

Derya Kilinc, Student, Arizona State University Tempe, United States

Kalyan Pasupathy, Professor, University of Illinois Chicago, United States

Mustafa Sir, Senior Scientist, Amazon.com, United States

We present a novel framework to characterize the probability that an offered appointment with a given access delay will be booked and subsequently attended by a patient using transactional data from an academic medical center. Practical use of the obtained realization probabilities within a patient prioritization scheme is demonstrated.

115-1363 Multilocation, Dynamic Staff Planning for a Healthcare System: Methodology and Application

Sandeep Rath, Assistant Professor, University of North Carolina Chapel Hill, United States

Kumar Rajaram, Professor, UCLA Anderson School of Management, United States

Utilizing data-driven approaches for workforce scheduling will be one way to reduce stress on hospital systems and healthcare professionals. We model and solve data-driven optimization approach for scheduling anesthesiologists for a large multilocation hospital system. We improved schedule predictability for physicians and cost savings for the healthcare system.

115-1387 Diet recommendations using hybrid inverse optimization methods

Farzin Ahmadi, Student, Civil and Systems Engineering, United States

Tinglong Dai, Professor, Johns Hopkins University, United States

Kimia Ghobadi, Assistant Professor, Johns Hopkins University, United States

We present a hybrid inverse optimization and machine learning framework to derive improved and personalized diets based on patients' past food intake observation and dietary guidelines. The framework enables better adherence to the patients' food habits and knowledge-based nutritional constraints by the care providers.

Invited Session

202

Tuesday, 11:30 AM - 01:00 PM, Celebration 4

Track: Healthcare Operations Management

Invited Session: **Improving Healthcare Operations**

Chair(s): Claudia Rosales

115-0164 Robust Data-Driven Design of a Smart Cardiac Arrest Response System

Weiliang Liu, Student, National University of Singapore, Singapore

Xin Wang, Student, National University of Singapore, Singapore

Tuesday, 11:30 AM - 01:00 PM

This paper studies data-driven design of a smart emergency response system for out-of-hospital cardiac arrest that involves drones for automatic external defibrillator delivery and community responders alerted via a mobile application, in addition to ambulances. We illustrate our model and solution approach using real data from Singapore.

115-0942 Influenza vaccine contracts in developing nations - Coordination, flexibility and vaccine coverage

Raunak Joshi, Student, Indian Institute of Management Calcutta, India
Sumanta Basu, Professor, Indian Institute of Management Calcutta, India
Claudia Rosales, Assistant Professor, University of Arkansas - Fayetteville, United States
Arnab Adhikari, Assistant Professor, Indian Institute of Management Ranchi, India

We study different contract mechanisms between a vaccine manufacturer and a vaccine procurement agency to coordinate the two-peak influenza vaccine supply chain, as observed in developing nations of (sub-)tropical regions. Here, we evaluate and compare the performances of private(for-profit) and public(not-for-profit) procurement agencies to attain desired vaccine coverage and profit.

115-1126 Assessing patient satisfaction with emergency department care delivery using a patient experience framework

Yann Ferrand, Assistant Professor, Augusta University, United States
Lawrence Fredendall, Professor, Clemson University, United States
Jennifer Siemens, Professor, Clemson University, United States
Danny Weathers, Professor, Clemson University, United States
Ronald Pirrallo, Vice-Chair for Academic Affairs Department of Emergency Medicine , University of South Carolina School of Medicine Greenville, United States

We adapt a generic quality framework with a Patient Experience Framework tailored to emergency department care delivery, to systematically review research about the patient experience. Managers should focus on how patients experience the services performed and how that experience and prior experiences affect expectations and subsequent evaluation of care received.

115-1767 Economics of Introducing a Mobile Clinic as an Added or Exclusive Modality for Dialysis Service

Mona Jabbari, Assistant Professor, Colorado School of Mines, United States
Nagesh Murthy, Professor, University of Oregon, United States
Eren Cil, Associate Professor, University of Oregon, United States

Medicare covers costs for dialysis treatments and any associated hospitalization for patients with End-Stage Renal Disease. We analyze the strategic interaction between Medicare and a dialysis service provider, and show that mobile clinic as an added or exclusive service modality can be a win-win-win for Medicare, service provider, and patients.

Invited Session

203	Tuesday, 11:30 AM - 01:00 PM, Celebration 5	Track: Healthcare Analytics
	Invited Session: HCOM Best Paper Presentations	
	Chair(s): Tinglong Dai Xin Ding	

115-0132 Provider Network Selection and Patient Targeting in Health Insurance Markets

Amin Hosseininasab, Assistant Professor, Warrington College of Business, United States
Willem-Jan van Hoeve, Professor, Carnegie Mellon University, United States
Sridhar Tayur, Professor, Carnegie Mellon University, United States

We develop a decision-support model to control healthcare expenditure in health insurance markets via better provider network selection and patient targeting. We develop a novel simultaneous multi-column-and-row generation algorithm that effectively solves real-life large-size instances to optimality. Our solution achieves \$564 million reduction in healthcare expenditure without lowering patient utility.

115-0656 Got (Optimal) Milk? Pooling Donations in Human Milk Banks with Machine Learning and Optimization

Timothy Chan, Professor, University of Toronto, Canada
Rafid Mahmood, Assistant Professor, Ottawa University, Canada
Deborah O'Connor, , ,
Debbie Stone, , ,
Sharon Unger, Professor, University of Toronto, Canada
Rachel Wong, Student, University of Toronto, Canada
Ian Yihang Zhu, Student, University of Toronto, Canada

Donor milk's macronutrient content is critical to infant development but varies substantially. To reduce this variance, milk banks pool multiple donations together to create a product. We propose a data-driven framework combining machine learning and optimization, to predict each donation's macronutrient content, then optimally combine them into pools.

115-1024 A Multi-Treatment Forest Approach for Analyzing the Heterogeneous Effects

Minmin Zhang, Student, University of Texas at Dallas, United States
Guihua Wang, Assistant Professor, University of Texas Dallas, United States
Wallace Hopp, Professor, University of Michigan - Ann Arbor, United States
Michael Mathis, Assistant Professor, University of Michigan Medical School, United States

We develop a new approach to estimate the heterogeneous treatment effects. We demonstrate the effectiveness of this approach using synthetic data and apply this new approach to a clinical setting to examine the effect of team familiarity on surgery duration.

115-1371 The Cost of Task Switching: Evidence from Emergency Departments

Tuesday, 11:30 AM - 01:00 PM

Yiwen Jin, Student, Sauder School of Business, UBC, Canada
Yige Duan, Student, University of British Columbia, Canada
Yichuan Ding, Associate Professor, McGill University, Canada
Mahesh Nagarajan, Professor, Sauder School of Business, UBC, Canada
Garth Hunte, Professor, University of British Columbia, Canada

We find that task switching in emergency departments hurts physician productivity, while it has no significant influence on treatment quality. Leveraging the heterogeneity among different task switches, we propose an implementable data-driven queue management method to partition patients into two queues. The simulation shows our method effectively improves efficiency.

Invited Session

204	Tuesday, 11:30 AM - 01:00 PM, Celebration 6	Track: POM-Finance Interface
	Invited Session: Fintech in Operations Management	
	Chair(s): WANG Ziang	

115-0482 Open-Source Software and Enterprise Information Security Performance

Shenyang JIANG, Post Doc/Researcher, Tongji University, China
Qian Wang, Assistant Professor, University of Macau, Macao, China
Ruiqi LIU, Assistant Professor, The Hong Kong Polytechnic University, Hong Kong, China
Yong Jin, Associate Professor, Hong Kong Polytechnic Univ, Hong Kong, China

This paper investigates the effect of open-source software (OSS) on enterprise information security performance. We find that a firm's OSS usage decreases its external data breach risk but increases its internal data breach risk.

115-0644 Who Gains from the blockchain-related announcements in China

Xiaoyang LI, Assistant Professor, The Hong Kong Polytechnic University, Hong Kong, China
Qing HE, Professor, Renmin University of China, China

China encourages blockchain innovation as a national policy. Chinese firms with lower R&D and worse information disclosure speculate on government-led blockchain hype by making vague description of their blockchain-related achievement. They receive more government supports but abuse them through their tunneling-related activities. Market reacts negatively to their speculative announcements.

115-0937 Match made in heaven: Supply Chain Information Sharing with Blockchain

Zhanyue Wang, Assistant Professor, Nankai University, China
Ziang Wang, Assistant Professor, PolyU, Hong Kong, China

We develop a multi-tier supply chain model to document how Blockchain based information sharing reduces inventory level and lead time. Using a novel job-posting data, we verify this significant decrease of IL and LT following Blockchain related recruitments, and the effect is significantly intensified by the firm upstreamness.

Contributed Session

205	Tuesday, 11:30 AM - 01:00 PM, Celebration 7	Track: Sustainable Operations Management
	Contributed Session: Networks and Collaborations in Sustainable Operations	
	Chair(s): Min Yu	

115-0684 A Multiperiod Competitive Supply Chain Framework with Environmental Policies and Investments in Sustainable Operations

Min Yu, Associate Professor, University of Portland, United States
Jose Cruz, Associate Professor, University of Connecticut, United States
Michelle Li, Assistant Professor, Babson College, United States
Amir Masoumi, Assistant Professor, Manhattan College, United States

We develop a supply chain network model in which firms compete noncooperatively in an oligopolistic manner over a finite planning horizon. Each firm makes a strategic decision regarding its target sustainability rating and tactical decisions of product flows, in the presence of consumer preferences for sustainability and environmental policies.

115-1209 Managing a Multi-tier Sustainable Supply Network: Focusing on a Resource Dependence Theory

Seongwon Park, Student, Michigan State University, United States
Srinivas Talluri, Professor, Michigan State University, United States

While there is a need to consider network-level environmental impacts in supply networks and firms also preferentially incorporate sustainability practices by collaborating with suppliers, it is still rare for suppliers to be collectively engaged in the firms' initiative. Thus, our study investigates the interplay between cross-tier environmental efficiencies.

115-1417 Is the need for sustainability a driver for more supply chain collaboration?

Bo Van Der Rhee, Professor, Nyenrode University, Netherlands
Jack Van Der Veen, Professor, Nyenrode University, Netherlands
Venu Venugopal, Professor, Nyenrode University, Netherlands
Taher Ahmadi, Assistant Professor, Nyenrode University, Netherlands

Tuesday, 11:30 AM - 01:00 PM

Increasingly, companies are forced to make their supply chains (SCs) sustainable. While in practice SC collaboration is uncommon, this might change when sustainability becomes a dominant objective. We model SCs with multiple objectives and demonstrate that when the sustainability dimension becomes more important, the motivation for collaborations increases.

Invited Session

206	Tuesday, 11:30 AM - 01:00 PM, Celebration 8	Track: Sustainable Operations Management
	Invited Session: New Topics in Sustainable Operations	
	Chair(s): Amrita Kundu	

115-1163 Advancing sustainable railway systems through Ecolabels

Willem Haanstra, Assistant Professor, University of Twente, Netherlands

Jan Braaksma, Associate Professor, University of Twente, Netherlands

Material passports and Ecolabels are becoming increasingly relevant instruments for improving the sustainability of railway transportation. We outline a Design Science Research project on the development of state-of-the-art Ecolabels for the European railway sector, focusing on the design, maintenance, and management of ecolabels in the European railway sector.

115-1373 Agricultural Index Insurance: An Optimization Approach

Jose Velarde Morales, Student, University of Chicago, United States

Linwei Xin, Associate Professor, University of Chicago, United States

Index insurance is a popular way of providing agricultural insurance in low-income countries. However, index insurance programs are very costly for governments. We develop an optimization-based approach for designing index insurance contracts. We validate our approach using real and synthetic data, and find that it is more cost effective.

115-1776 Business Model Innovation to Reduce Lead Poisoning in Bangladesh

Amrita Kundu, Assistant Professor, Georgetown University, United States

Erica Plambeck, Professor, Stanford University, United States

Qiong Wang, Associate Professor, University of Illinois Urbana-Champaign, United States

We have designed a business model to extend the life of lead acid batteries used in electric three wheelers in Bangladesh. Through a randomized control trial, we are testing the impact of the business model on battery life and performance, recycling rate and lead emissions.

115-1825 Do Mergers and Acquisitions Improve Efficiency: Evidence from Power Plants

Omer Karaduman, Assistant Professor, Stanford University, United States

Mert Demirer, Assistant Professor, MIT, United States

Using rich data on hourly physical productivity from US fossil fuel power plants, we study the effects of M&As on efficiency and provide evidence on the mechanisms. We find that acquired plants experience an average of 4 percent efficiency increase five to eight months after acquisition.

115-2144 The Role of Information about Circular Economy Strategies in Take-Back Programs for Clothing

Erin McKie, Assistant Professor, Ohio State University, United States

Anna Saez De Tejada Cuenca, Assistant Professor, IESE Business School, Spain

Vishal Agrawal, Associate Professor, Georgetown University, United States

Retailers are increasingly sponsoring take-back initiatives to facilitate the recycling of secondhand clothing. We test how consumers' propensity to return used garments is affected as the degree of information transparency and reward level is manipulated.

Invited Session

207	Tuesday, 11:30 AM - 01:00 PM, Celebration 9	Track: Supply Chain Management
	Invited Session: SCM Best Paper Competition	
	Chair(s): Shiliang Cui Joel Goh	

115-2156 Last Time Buys during Product Rollovers: Manufacturer and Supplier Equilibria

Audrey Bazerghi, Student, Northwestern University Kellogg School of Management, United States

Jan Van Mieghem, Professor, Northwestern University, United States

We study manufacturer-supplier interactions during the rollover between a legacy part and its successor in a durable good supply chain. We propose a two-stage noncooperative game and prove there exist only six equilibria which achieve a "last time buy" delay for the old part under a necessary and sufficient condition.

115-2157 UMOTEM: Upper Bounding Method for Optimizing over Tree Ensemble Models and its Applications in Pricing

Georgia Perakis, Professor, Massachusetts Institute of Technology, United States

Leann Thayaparan, Student, Massachusetts Institute of Technology, United States

This work proposes UMOTEM, an algorithm for solving optimization problems where the objective is determined by a tree ensemble. We show UMOTEM scales well and bound analytically the optimality gap. Through work with Oracle Retail, we demonstrate UMOTEM can help improve supply chain management decisions when exact formulations don't scale.

115-2158 Supply chain risk and resolution: An empirical study of stock market reactions

Keno Theile, Student, Kühne Logistics University, Germany

Tuesday, 11:30 AM - 01:00 PM

Christian Hofer, Associate Professor, University of Arkansas, United States

Vinod Singhal, Professor, Georgia Institute of Technology, United States

Kai Hoberg, Professor, Kuehne Logistics University, Germany

The estimation of supply chain risk and resolution of supply chain risk has been challenging due to missing firm-level data. We propose a measure based on textual analysis of quarterly earnings calls. While SC risk has a negative effect on stock returns, we find that resolution has a positive effect.

115-2159 How Much did Store Closures Boost Online Sales during COVID-19?

Ragip Gurlek, Student, Emory University, United States

Diwas KC, Professor, Emory University, United States

Paolo Letizia, Associate Professor, University of Tennessee, United States

We examine the impact of store closures on omnichannel consumer behavior during the COVID-19 pandemic. We quantify the lift in online sales as well as the proportion of offline sales salvaged through the online channel. Additionally, we find that closures increased the likelihood of returns and ordering a bestselling product.

Invited Session

210	Tuesday, 11:30 AM - 01:00 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Priorities, Actions, & Modeling II	
	Chair(s): Maria Besiou Erica Gralla	

115-0190 Market Systems in a Humanitarian Crisis: Making Food more Affordable and Available

Tristan Downing, Student, Massachusetts Institute of Technology, United States

Jarrod Goentzel, Senior Lecturer, Massachusetts Institute of Technology, United States

Maria Besiou, Professor, Kuehne Logistics University, Germany

Humanitarian organizations increasingly provide cash assistance but struggle to analyze market dynamics. Our system dynamics model, created in collaboration with ICRC, combines population displacement with material and financial flows for market actors. Model application in Nigeria demonstrates the cost-effectiveness of market intervention and supports efforts to strengthen the humanitarian-development nexus.

115-0236 Prepositioning Inventory of Multiple Items for Humanitarian Relief: Strategic Investment and Budget Allocation

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

Scott Webster, Professor, Arizona State University Tempe, United States

We develop methods for prepositioning inventory for disaster relief. We illustrate how our methods can be used to inform strategic decisions related to the allocation of funds among competing priorities, including investment in prepositioned inventory.

115-0454 The impact of humanitarian operations research: a critical review, challenges, and opportunities

Maria Besiou, Professor, Kuehne Logistics University, Germany

Erica Gralla, Associate Professor, George Washington University, United States

Since the first papers on humanitarian operations, there has been discussion about the impact of our research on practice and on scholarship. We review the literature and survey authors to see how we are doing so far, with an eye toward maintaining or redirecting the trajectory toward increasing impact.

115-0778 Wildfire Response Operations: Operational Information Management for Disaster Response

Patricia Moravec, Assistant Professor, Indiana University Bloomington, United States

Lu (Lucy) Yan, Associate Professor, Indiana University Bloomington, United States

Alfonso Pedraza, Professor, Indiana University, United States

Sebastian Villa, Assistant Professor, University of New Mexico, United States

We examine whether and how operational information provided through social media by a reliable organization impacts people's emotions and actions during a wildfire response. Our analysis indicates that operational updates increase fear. Strikingly, enhancing the credibility of the relief organization decreases fear and, thereby, increases people's intention to heed warnings.

Invited Session

211	Tuesday, 11:30 AM - 01:00 PM, Celebration 13	Track: Teaching/Pedagogy in POM
	Invited Session: Classroom Games for Interaction and Insight	
	Chair(s): Charles Munson	

115-0827 Implementing a Second Coordinated Round of the Beer Game with Excel

Jonathan Jackson, Associate Professor, Providence College, United States

The beer game is a well-known game used in operations management courses to illustrate the bullwhip effect. In this session, I demonstrate a second coordinated version of the beer game, implemented in Excel. It introduces new challenges and forces students to use team-based problem solving to manage their supply chain.

115-1039 Diving Deep into Goldratt's Dice Game

LAN LUO, Assistant Professor, University of Hartford, United States

Charles Munson, Professor, Washington State University Pullman, United States

Tuesday, 11:30 AM - 01:00 PM

Using an Excel-based simulation of the Dice Game from The Goal, students can explore capacity and inventory options to maximize profit. Instructors can change strategy costs to produce different winning strategies. Regression equations can predict throughput based on initial inventory, number of game rounds, and capacity mean and variance.

115-1109 Game Changer: A New Post-COVID Paradigm for Classroom Interaction using Google Sheets

Gihan Edirisinghe, Assistant Professor, Western Kentucky University, United States
Maria Trindade, Post Doc/Researcher, Maria Alice Trindade, Italy
LAN LUO, Assistant Professor, University of Hartford, United States

The COVID-19 pandemic rendered many traditional in-class activities that support operations management learning unfeasible. This research outlines an innovative strategy for conducting interactive classroom activities utilizing freely and widely accessible Google Sheets. The strategy was empirically tested in two countries and is suitable for both face-to-face and online teaching.

Invited Session

212	Tuesday, 11:30 AM - 01:00 PM, Celebration 14	Track: Service Operations
	Invited Session: Strategic Queueing	
	Chair(s): Ricky Roet-Green Yanting Li	

115-1081 On Information Disclosure in an Observable Shared Waiting Room

Yanting Li, Student, University of Rochester, United States
Ricky Roet-Green, Associate Professor, University of South Carolina Aiken, United States

We study a service system with two types of customers arriving at a shared waiting room, and each type waits for the service provided by a specific server out of two servers. We measure the system performances to evaluate the value of the queue length information.

115-1102 Robust Queue Inference from Waiting Times

Eojin Han, Assistant Professor, Southern Methodist University, United States
Chaithanya Bandi, Associate Professor, National University of Singapore, Singapore
Alexej Proskynitopoulos, Student, Northwestern University, United States

We consider the problem of inferring service times from waiting time observations. Specifically, we propose an inference framework based on robust optimization, where service times are described via sets that are calibrated by the observed waiting times. Tractable optimization formulations to estimate moments and risk measures are provided.

115-1320 Strategic flexibility in service systems

Yoav Kerner, Senior Lecturer, Ben Gurion University of the Negev, Israel
Binyamin Oz, Senior Lecturer, The Hebrew University of Jerusalem, Israel
Seva Shneer, Associate Professor, Heriot Watt University, United Kingdom

We study a multi-server system. Customers may join any unobservable queue in front of each server or join all of them simultaneously. In the latter case, they will be served by the first available server and removed immediately from the other queues. Equilibrium and socially optimal strategies are studied.

115-1366 Behavior-Aware Queueing: When Strategic Customers Interact with Strategic Servers

Yueyang Zhong, Student, Booth School of Business, United States
Raga Gopalakrishnan, Assistant Professor, Queen's University, Canada
Amy Ward, Professor, Booth School of Business, United States

We study a queueing model with endogenous customers and servers behavior. We characterize when a Nash equilibrium exists, and, when exists, its multiplicity and monotonicity behavior. Moreover, we discover efficiency loss regarding social welfare and net profit due to the ignorance of strategic human behavior.

Invited Session

213	Tuesday, 11:30 AM - 01:00 PM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Strategic Interactions in the Interface of Operations Management and Information Systems	
	Chair(s): Abhishek Roy Hao Jiang	

115-0519 Returns-based Partnerships: Can Competing Retailers Become Allies?

Ahmed Timoumi, Assistant Professor, Indian School of Business, India
Abhinav Uppal, Assistant Professor, Indian School of Business, India

Amazon recently formed a partnership with its competitor Kohl's that allows Amazon's customers to return products at Kohl's stores. While this makes returns more flexible for Amazon's customers, it also sends additional footfall to its competitor's stores. In this paper, we investigate a theoretical rationale for this non-trivial partnership.

115-0581 Getting Your Money's Worth: Capacity Planning Through Admission Control vs. Consumption Control

Sreekumar Bhaskaran, Associate Professor, Southern Methodist University, United States
Sanjiv Erat, Associate Professor, University of California San Diego, United States
Rajiv Mukherjee, Assistant Professor, Southern Methodist University, United States

Tuesday, 11:30 AM - 01:00 PM

In many industries, consumers who purchase services pay a fixed upfront fee for access, and then consume that service over a period of time. We examine the implications of this temporal separation of purchase and consumption on a user's consumption choices, and a firm's optimal capacity planning strategy.

115-1086 To Join or Not To Join: How Market Conditions Affect the Participation of Competing

Hao Jiang, Student, Temple University, United States
Abhishek Roy, Assistant Professor, Temple University, United States
Joydeep Srivastava, Professor, Temple University, United States
Subodha Kumar, Professor, Temple University, United States

We investigate the impact of boom and bust conditions of the market on firms' strategic decisions about the participation in cooperative ventures that benefit all firms, such as industry alliances and generic advertising campaigns, when they face the prospect of cooperating with their competitor.

115-1748 The Impact of Consumer Showrooming on an Omnichannel Retailer under Supplier Encroachment

Samayita Guha, Assistant Professor, Florida International University, United States
Abhishek Roy, Assistant Professor, Temple University, United States
Subodha Kumar, Professor, Temple University, United States

Popularity of retail e-commerce has enabled many upstream manufacturers to encroach their downstream retailers' market through online direct channels. In this paper, we study how the interaction of consumer showrooming and supplier encroachment impact the omnichannel retailer and the manufacturer.

Invited Session

214	Tuesday, 11:30 AM - 01:00 PM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Digital Technologies in Operations Management	
	Chair(s): David Wuttke	

115-0285 Technical complaints, tweets, and automotive recalls

Christoph Schmidt, Post Doc/Researcher, Eth Zurich, Switzerland
David Wuttke, Assistant Professor, Technische Universitat Munchen, Germany
George Ball, Associate Professor, Indiana University Bloomington, United States
Jorge Mejia, Associate Professor, Indiana University, United States

Our study adds to the literature on automotive recalls by examining how social media and NHTSA complaint sentiment affects the timing of a firm's recall decisions. Using a recurrent event Cox model, we find that negative Twitter sentiment increases, and negative complaints sentiment decreases the immediate probability of a recall.

115-0565 When transparency backfires: the impact of blockchain adoption on ESG performance

Andreas Gernert, Assistant Professor, Kuehne Logistics University, Germany
Robert Graf, Professor, IU Internationale Hochschule, Germany
David Wuttke, Assistant Professor, Technische Universitat Munchen, Germany

Using game theory, we analyze the effects that blockchain adoption has on investments in sustainability. Specifically, two competing firms decide on the level of sustainability and the price of their products, then customer choose which product to buy. We identify optimal strategies and examine the impact on welfare.

115-1111 Empirical evidence about payment term extensions in the supply chain finance context

David Wuttke, Assistant Professor, Technische Universitat Munchen, Germany

Digital platforms enable new forms of collaboration along supply chains, such as reverse factoring. When focal firms introduce reverse factoring platforms, they connect to many suppliers (1:n). This research demonstrates empirically that this can lead to new dynamics, yet unobserved in analytical work.

115-1179 Augmented Reality for Quality Inspections in Manufacturing. An Experiment on Task Performance and Human Factors

Arne Seeliger, Student, ETH Zurich, Switzerland
Torbjørn Netland, Assistant Professor, ETH Zurich, Switzerland

We evaluated how Augmented Reality (AR) affects performance and human factors of industrial quality inspection. In an experiment, participants performed two types of real-world quality inspection tasks utilizing different forms of AR-based assistance. We find that, depending on task difficulty, AR increases performance and measures relating to human factors.

Invited Session

215	Tuesday, 11:30 AM - 01:00 PM, Coral Spring 2	Track: Emerging Topics in Operations Management
	Invited Session: Social Responsibility in Operations and Supply Chains	
	Chair(s): Rakesh Mallipeddi M. Serkan Akturk	

115-1211 Assessing the Impact of Brand-Level ESG Violations on Sales

Yao Chen, Student, Clemson University, United States
M. Serkan Akturk, Assistant Professor, Clemson University, United States
Rakesh Mallipeddi, Assistant Professor, The Ohio State University, United States

Tuesday, 11:30 AM - 01:00 PM

Employing retail transaction data and firm-level environmental, social, governance (ESG) information, our research investigates the impact of firms' ESG violations on their operational performance. We show that ESG violations lead to decreased sales for brands. Furthermore, store location and customer demographics moderate the relationship between ESG violations and brand sales.

115-1258 The Effects of ESG Violations on Firm Value

Rakesh Mallipeddi, Assistant Professor, The Ohio State University, United States
Subodha Kumar, Professor, Temple University, United States
Arvind Mahajan, Professor, Texas A&M University College Station, United States

In this study, we examine the effects of violations related to the environment, social, and governance (ESG) issues on a firm's financial performance. We documents the effects by employing an extensive sample of 1,593 ESG violations involving more than 1000 firms.

115-1453 The impact of supply chain relationship on CSR

Xingping Jia, Associate Professor, Hubei University, China
Xingzhi Jia, Assistant Professor, Renmin University of China, China
Xenophon Koufteros, Professor, Texas A&M University College Station, United States
David Griffith, Professor, Texas A&M University, United States

Using dyadic data, this study examines the complex impact of supply chain relationship on CSR.

115-1499 Estimating the Competitive Impact of Sustainable Car Introductions in the Auto Industry

Ahmet Colak, Assistant Professor, Clemson University, United States
M. Serkan Akturk, Assistant Professor, Clemson University, United States

Recently, the state of California has passed its legislation on "Zero-Emission Vehicle" program to ban the sales of new gasoline-powered vehicles after 2035. Yet, there is limited empirical insights for the competition and cross-channel effects between traditional, semi-sustainable, and zero-emission vehicles. Lack of such granular empirical insights motivate our study.

115-1573 Jumping the Queue: Managing Early and Same-Day Appointments

Rakesh Mallipeddi, Assistant Professor, The Ohio State University, United States
Yunxia Zhu, Associate Professor, University of Nebraska Lincoln, United States
Jon Stauffer, Assistant Professor, Mays Business School, Texas A&M University, United States

A common assumption in the operations management literature is that patients are homogeneous to wait time, and based on this assumption researchers attempt to optimize scheduling of patients from the perspective of health service providers. However, what if different patient types are heterogeneous and respond differently to wait times?

Invited Session

216	Tuesday, 11:30 AM - 01:00 PM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Disruption Risk Management	
	Chair(s): Wei Liu	

115-0113 Emergency Supply Chain Configuration with Correlated Uncertainties

Sheng Bi, Assistant Professor, Shanghai University of Finance and Economics, China
Yini Gao, Assistant Professor, Singapore Management University, Singapore
Guodong Lyu, Assistant Professor, Hong Kong University of Science and Technology, China

Emergency supply chain (ESC) is the supply chain that forms in response to emergencies, such as pandemics, natural disasters, or man-made attacks. A wise design of ESC is crucial to serving the emergency demand. We study the capacity configuration of ESC subject to uncertainties and explore the impact of correlations.

115-0173 Data-Driven Aircraft Assignment to Minimize Delay Propagation

Vinayak Deshpande, Professor, University of North Carolina Chapel Hill, United States
Vidyadhar Kulkarni, Professor, University of North Carolina Chapel Hill, United States
Wei Liu, Post Doc/Researcher, Purdue University, United States

We propose a new approach to reduce the delay propagation by optimizing the assignment between incoming and outgoing flights flown by an airline at a given airport. We show that the assignments derived from the data-driven approach can perform better than the optimal assignment derived in the deterministic setting.

115-0244 Operational Risk Management: Optimal Inspection Policy

Youngsoo Kim, Assistant Professor, University of Alabama Tuscaloosa, United States
Yuqian Xu, Assistant Professor, UNC Chapel Hill, United States

We study how a financial firm can optimally design inspection policies to manage operational risk losses. We find that periodic policy dominates random policy if and only if the inspection cost is low. Also, we construct a novel hybrid policy that dominates both random and periodic policies.

115-0971 Inequity in Disaster Operations Management

Xabier Barriola, Post Doc/Researcher, INSEAD, France
William Schmidt, Assistant Professor, Cornell University, United States

Tuesday, 11:30 AM - 01:00 PM

We test for differences in the percentage change in prices paid for grocery products between low-income and high-income communities in the months following three large Atlantic hurricanes. We find that low-income communities in the disaster zones endure higher average percentage price increases within grocery categories compared to high-income communities.

Invited Session

217	Tuesday, 11:30 AM - 01:00 PM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Customer-Centric Operations	
	Chair(s): Yasin Alan Hallie Cho	

115-0455 The integrated impact of employee engagement, human capital, and workforce agility on green innovation

Abdulkareem Awwad, Associate Professor, Qatar University, Qatar

This study provides empirical evidence on the integrated impact of employee engagement, human capital, and workforce agility on sustainable green product innovation performance. The results that emerged from the descriptive and analytical statistical analysis provided a strong insight into these constructs' strategic role in developing new green products.

115-0467 Ownership and Rental Utilities in Rent-to-Own Businesses: A Modular Estimation Framework and Renter Decision Models

Milad Armaghan, Student, University of Texas at Dallas, United States

Metin Cakanyildirim, Professor, University of Texas Dallas, United States

Andrew Frazelle, Assistant Professor, University of Texas Dallas, United States

With a modular framework that separates estimation from a renter's decision problem, we study several renter decision models reflecting different degrees of sophistication (strategic, myopic) and different levels of alertness. For each model and with real-life data, we estimate a nonparametric utility distribution and the probability of abandoning the rental.

115-0932 Supply Networks and the Cash Conversion Cycle

Maximiliano Udenio, Associate Professor, KU Leuven, Belgium

Shaunak Dabadghao, Assistant Professor, Technische Universiteit Eindhoven, Netherlands

The working capital management of a firm affects not only its own performance, but that of its supply chain partners. We test a number of hypothesis Relating the financial management of firms with their and their partners performance. We use a large panel of supply chain relationships.

115-1379 A Study on the Role of Product Image in Online Shopping

Namkyung Lee, Post Doc/Researcher, Korea University, South Korea

Hyun Seok (Huck) Lee, Associate Professor, KUBS(Korea University Business School), South Korea

Product images provide useful information to online shoppers and are supposed to alleviate the uncertainty in purchase decision. Using the image tag (various features of a product that were detected by an AI and converted into a set of words), we examine the role of product image in online shopping.

115-1838 On the Granularity of Wait Time Information

Yiming ZHANG, Assistant Professor, The Chinese Univ of Hong Kong, Shenzhen, China

Qiuping Yu, Associate Professor, Georgia Institute of Technology, United States

Yong-Pin Zhou, Professor, University of Washington, United States

Collaborating with a ride-sharing platform, we study whether and how the granularity of wait time information (WTI) impacts customers abandonment behavior through a randomized field experiment on our partner platform. To uncover the mechanism, we propose a structural model to explore the impacts of granularity of WTI on customers' behavior

Invited Session

218	Tuesday, 11:30 AM - 01:00 PM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research in Operations - Interdisciplinary Perspectives	
	Chair(s): Sarv Devaraj	

115-0044 Determinants of Operations Management Faculty Salary

James Abbey, Associate Professor, Texas A&M University College Station, United States

Michael Ketzenberg, Professor, Texas A&M University College Station, United States

Richard Metters, Professor, Texas A&M University College Station, United States

We deliver a quantitative statement on the dollar value of faculty activities. In terms of faculty salaries, how much is an "A" publication worth? How much is non-"A" publication worth? We also seek to find the relative value of the full range of scholarly activities.

115-1692 Economic Impact of On-site Executive Education

Ana Rosado Feger, Associate Professor, Ohio University, United States

Ashley Metcalf, Associate Professor, Ohio University, United States

Executive education programs provide professional development to participants. In a small university town, they also provide significant benefit to the local economy. We develop a model for assessing and communicating impact which can assist in operational planning and town-gown collaboration for mutual benefit.

115-1974 An Empirical Study of Hospital Portfolio Strategy and Patient Choice

Sriram Thirumalai, Associate Professor, Texas Christian University (TCU), United States

Tuesday, 11:30 AM - 01:00 PM

Sarang Sunder, Associate Professor, Indiana University Bloomington, United States

Specialize? Diversify? Do patients care? In this study, we investigate the demand implications from hospitals' portfolio strategy [quality signaling]. Using inpatient discharge data from Florida, we find strong evidence that patient choice is positively influenced by a hospital's depth (focus) and breadth (related focus) of expertise in a department.

Invited Session

219	Tuesday, 11:30 AM - 01:00 PM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Panel: A Research Agenda for Lean Management	
	Chair(s): Daryl Powell Andrea Furlan	

115-2106 Panel: A Research Agenda for Lean Management

Daryl Powell, Professor, Norwegian University of Science And Technology, Norway

Andrea Furlan, Professor, Padova University, Italy

Rachna Shah, Professor, University of Minnesota, United States

Eivind Reke, Senior Advisor, Sintef Trondheim, Norway

Tortorella Guilherme, , ,

This panel discussion takes stock of the key research topics on lean management. We organize a panel of leading lean academics within the following topics: Lean as a Strategy; Lean and learning, Lean and Sustainability, Lean Leadership and behaviors, and Lean and Digitalization. Each panelist will discuss the main theoretical

Contributed Session

220	Tuesday, 11:30 AM - 01:00 PM, Barrel Spring 1	Track: POM-Marketing Interface
	Contributed Session: Pricing	
	Chair(s): Kenan Arifoglu	

115-0253 Process Improvement under the Reference Price Effect

Zeming Wang, Student, University of Groningen, Netherlands

Jasper Veldman, Associate Professor, University of Groningen, Netherlands

Ruud Teunter, Professor, University of Groningen, Netherlands

We investigate a supplier's process improvement and pricing decisions in a setting where the reference price effect of customers drives a retailer's demand. We find that the reference price effect stimulates process improvement but may harm supply chain efficiency, shedding new light on how the reference price effect impacts efficiency.

115-0590 Luxury Brand Licensing: Competition and Reference Group Effects

Kenan Arifoglu, Associate Professor, University College London, United Kingdom

Christopher Tang, Professor, University of California Los Angeles, United States

Licensing enables luxury brands to reach out to their aspirational, low-end consumers ('followers') who value a brand more when more high-end consumers ('snobs') use it. However, over-licensing might dilute the brand for snobs who value brand exclusivity. We develop a game-theoretic model to study these two countervailing forces of licensing.

115-1441 Managing service shutdowns: Cash refunds or vouchers?

Rachel Chen, Professor, University of California Davis, United States

Eitan Gerstner, Professor, Technion Israel Institute of Technology, Israel

Daniel Halbherr, Associate Professor, Hec Paris, France

Paolo Roma, Associate Professor, Universita Degli Studi Di Palermo, Italy

Service shutdowns caused by exogenous events are on the rise. Such shutdowns pose major challenges for service providers, customers, and regulators. This paper compares cash refund only, voucher only, and hybrid strategies from both profit, survival time, and welfare perspectives. Our findings provide important implications for all involved actors.

115-1923 Personalized Pricing: A Theoretical Analysis Under Intra-brand Competition

Shichang Li, Student, University of Science and Technology of China, China

Quan Zheng, Associate Professor, University of Science and Technology of China, China

Jingyan Li, Student, University of Science and Technology of China, China

Jie Wu, Professor, University of Science and Technology of China, China

This paper investigates the effect of personalized pricing (PP) under intra-brand competition. Different from the classical prisoner's dilemma outcome, under reselling format, PP can boost retailers' profit when both retailers exercise. Under agency selling format, one retailer exercises PP but the other retailers does not exercise in equilibrium.

Invited Session

221	Tuesday, 11:30 AM - 01:00 PM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Recent Developments in Procurement	
	Chair(s): Harish Guda	

Tuesday, 11:30 AM - 01:00 PM

115-0527 Product Line Pricing under Utility-based Choice Model with Ambiguity Aversion

Qi CHENG, Student, City University of Hong Kong, Hong Kong, China

Jingwen Lin, Student, City University of Hong Kong, Hong Kong, China

Yimin Yu, Associate Professor, City University of Hong Kong, Hong Kong, China

We study the robust multiproduct pricing problem under a general utility-based discrete choice model. The customer preference is given as a multiplier preference with a relative entropy penalty. We provide an explicit solution for optimal prices, and our results recover the classical constant markup property.

115-1144 On the prevalence of unethical behaviour in buyer-supplier relationships

Fanny Chen, Student, Rotterdam School of Management, Netherlands

Finn Wynstra, Professor, Erasmus University, Netherlands

Procurement professionals, who are boundary spanners between the internal organisation and external suppliers, are prone to unethical behaviour. The present study examined the prevalence of unethical behaviour among procurement professionals utilising the Extended Crosswise Model. We will elaborate on the validity of the method and present the most prevalent practices.

115-1493 Fighting supply chain corruption: Promoting compliant operating practices and social justice

Geng Wang, Student, Aalborg University, Denmark

Yang Cheng, Associate Professor, Aalborg University, Denmark

Hugo Lam, Professor, University of Liverpool, United Kingdom

The purpose of this paper is to investigate the practical challenge of combating supply chain corruption (SCC) in a global context and promoting compliant and fair operating practices from a justice perspective. In particular, we argue that operations and supply chain management (OSCM) scholars could help fight SCC.

115-1557 Lack of Intentions or Actions? Analysis of the Sustainability-related Intention Action Gap

Ruth Schuelken, Student, University of Mannheim, Germany

Christoph Bode, Professor, University of Mannheim, Germany

Matthias Schlipf, Professor, ., Germany

Drawing on the consumer intention-action gap, this paper investigates whether a similar effect results in a gap between the corporate sustainability intentions and the sustainability intentions implemented in procurement. A survey and interviews provide first insights that such a gap exists and provide first explanations on its emergence.

Invited Session

222	Tuesday, 11:30 AM - 01:00 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Economics in Innovative Operational Business Models	
	Chair(s): Zheyu Jiang	

115-0701 The Dynamics of Distribution to Financially Constrained Nanostores

Zheyu Jiang, Student, University of Miami, United States

Harihara Natarajan, Professor, University of Miami, United States

Nan Yang, Professor, University of Miami, United States

Nanostores are small-sized, cash-operated retailers in developing markets. We study a decision problem facing a distributor who supplies financially-constrained nanostores and characterize its optimal policy. Further, we investigate the impacts of financial credits and retail pricing flexibility on distribution dynamics and stakeholders' profits in the supply chain.

115-0721 Managing Channel Profits with Network Effects

Dawei Jian, Student, University of California Riverside, United States

Many products exhibit network effects. How should manufacturers sell them through retail channels? We study this long-term channel contracting problems where the retailer privately observes and controls the evolving market conditions. The optimal contract unifies the classic centralized and decentralized policies, and characterizes dual role of network effects.

115-1067 Co-opetition business model for electric vehicle operations

Bo Feng, Professor, Business department, China

Jixin Zhao, Student, Department of Statistics, operations, and data science, United States

We investigate an emerging business model in electric vehicle operations. The model is established upon a co-opetitive paradigm, under which a pair of complementary resources are taken within a cooperation process. We investigate how to bring about the model's maximum efficacy using reciprocal cooperation contracts and ingenious pricing strategies.

115-1269 Dynamic pricing in the presence of loyalty-based customers

yunke li, Student, University of Miami Business School, United States

Harihara Natarajan, Professor, University of Miami, United States

Nan Yang, Professor, University of Miami, United States

Our work is motivated by the decision problem facing the revenue manager of a hotel that offers a loyalty reward program. We build a stylized model that to study how loyalty considerations impact dynamic prices, contrasting the trajectory of prices with those in contexts without customer reward programs.

Invited Session**223**

Tuesday, 11:30 AM - 01:00 PM, Regency Ballroom Q

Track: Revenue Management and Pricing

Invited Session: **Frontiers in Modern Pricing**

Chair(s): Michael Hamilton

115-0248 List now or Later? An equilibrium analysis of advance-booking platforms

Neha Sharma, Student, Kellogg School of Management, United States
 Sumanta Singha, Assistant Professor, Texas Tech University, United States
 Milind Sohoni, Professor, Indian School of Business, India
 Achal Bassamboo, Professor, Northwestern University, United States

Many sharing platforms allow guests to reserve assets ahead of service. On such platforms, "hosts" commit to providing assets ahead of availability by creating a "listing." Building on empirical support for hosts' decision of "when to list" from real data, we show the limitations of widely used revenue-sharing contracts.

115-0501 Convex Surrogate Loss Functions for Contextual Pricing with Transaction Data

Max Biggs, Assistant Professor, Darden School of Business, United States

We study an off-policy contextual pricing problem with transaction data. We introduce suitable loss functions for this setting which can be directly optimized to find effective pricing policies with expected revenue guarantees, without the need for estimation of an intermediate demand function.

115-0890 Approximation Schemes for Dynamic Pricing with Opaque Products

Yukai Huang, Student, Olin Business School, Washington Univ, United States
 Jacob Feldman, Associate Professor, Washington University St Louis, United States
 Xingxing Chen, Assistant Professor, University of Richmond, United States

We consider a choice-based dynamic resource allocation/pricing problem with opaque products, and provide various constant factor approximation schemes.

115-2077 Pricing Strategies for Online Dating Platforms

Titing Cui, Student, University of Pittsburg, United States
 Michael Hamilton, Assistant Professor, University of Pittsburgh, United States

Dating apps have become the most common way for new couples to meet. Many of these dating apps use subscription-based pricing (SP). The most extreme version of SP is contract pricing (CP), where customers pay one-time price. We study the profit and welfare trade-offs associated with the

115-2079 Static Pricing for Queueing Systems

Jacob Bergquist, Student, Columbia University, United States
 Adam Elmachtoub, Associate Professor, Columbia University, United States

We consider an M/M/C model with price-sensitive customers in which the objective is to maximize revenue while not letting congestion get too large. We provide performance guarantees for static pricing policies by constructing policies which achieve certain proportions of the optimal policy's performance in terms of revenue and cost.

Invited Session**224**

Tuesday, 11:30 AM - 01:00 PM, Regency Ballroom O

Track: Retail Operations

Invited Session: **Product management and pricing**

Chair(s): Punya Chatterjee

115-0419 The Role of Supply Chain in Retailer Take-Back: An Empirical Study

Yuqi Peng, Assistant Professor, Salisbury University, United States
 Yan Dong, Professor, University of South Carolina, United States
 Sriram Venkataraman, Associate Professor, University of South Carolina, United States
 Mark Ferguson, Professor, University of South Carolina, United States

While manufacturers are regulated to take back their end-of-life products, retailers are regulated. From a supply chain perspective, we empirically investigate why retailers have the incentive of offering take-back services. We find that a retailer's take-back decision can be affected by its manufacturing suppliers and its market competition.

115-0770 Optimal Pricing Policy for Green Products under Supply Disruption

Mehdi Amini, Professor, University of Memphis, United States
 Punya Chatterjee, Assistant Professor, University of Memphis, United States
 Yi Liu, Assistant Professor, University of South Dakota, United States
 Rahul Pandey, Assistant Professor, University of Memphis, United States

We examine the optimal pricing decision for a retailer selling substitutable products with different levels of greenness under supply disruption. We investigate how the susceptibility of green products to supply disruption, the supply disruption duration and the sensitivity of consumers to product unavailability impact the retailer's optimal pricing decision.

115-0907 The Impact of Return Logistics on Customer Repurchase: A Service Co-Production Perspective

Tuesday, 11:30 AM - 01:00 PM

Michael Galbreth, Professor, University of Tennessee Knoxville, United States

Guangzhi Shang, Associate Professor, Florida State University, United States

Li Wang, Post Doc/Researcher, Zhejiang Lab, China

Yu Jiang, Student, University of Tennessee, Knoxville, United States

This paper studies the link between customer loyalty and return logistics efficiency at the customer and shipper levels. We use proprietary datasets from an online apparel retailer to test hypotheses using a Cox model. Our paper contributes new managerial insights regarding the importance of speed throughout the return logistics process.

115-1487 Remanufacturing Technology Portfolio Planning for End-of-life Product

Ying Cao, Assistant Professor, Penn State Erie, United States

Kai Meng, Professor, Nanjing University of Aeronautics and Astronautics, China

Guang Li, Assistant Professor, Queen's University, Canada

Xianghui (Richard) Peng, Associate Professor, Penn State University Erie, United States

In a closed-loop supply chain, remanufacturers are often exposed to various technology alternatives. In this research, we study the remanufacturing technology portfolio planning of a remanufacturer in order to maximize the expected profit. We derive the properties of optimal technology portfolio structure and conduct numerical study to generate managerial insights.

Invited Session

225	Tuesday, 11:30 AM - 01:00 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Economics of Disruptive Technologies	
	Chair(s): Hong Guo	

115-1127 Incentivizing Buyers to Share with Renters: An Economic Analysis of Manufacturers' Cooperation with Sharing Platforms

Wenyi Zhang, Student, Tianjin University, China

Nan Feng, Professor, Tianjin University, China

Haiyang Feng, Professor, Tianjin University, China

Some manufacturers attempted to cooperate with sharing platforms by subsidizing buyers who share products in response to the sharing economy. We demonstrate that such cooperation is easier to achieve with a higher sale price and sharing market-size; and they both have incentives to share costs and profits to promote cooperation.

115-2120 Is in-game purchase a guilty pleasure? Negative beliefs and treatment

Mei Li, Associate Professor, University of Oklahoma, United States

Hong Guo, Professor, Arizona State University, United States

Gyusuk Lee, Assistant Professor, IE BUSINESS SCHOOL, Spain

Rachna Shah, Professor, University of Minnesota, United States

In this study, we explore negative belief toward in-game purchases that prohibit gamers from in-game spending. We conduct three consecutive studies to explore the severity of these negative beliefs, identify their key types, and develop an approach to reduce its severity and improve positive attitudes toward in-game purchases.

115-2121 Measuring algorithmic interpretability: A human-learning-based framework and the corresponding cognitive complexity score

John Lalor, Assistant Professor, University of Notre Dame, United States

Hong Guo, Professor, Arizona State University, United States

In this work we build upon programming language theory and cognitive load theory to develop a framework for measuring algorithmic interpretability. The proposed measurement framework reflects the process of a human learning an algorithm and has several desirable properties.

Invited Session

226	Tuesday, 11:30 AM - 01:00 PM, Silver Spring 1	Track: Data Science and Analytics
	Invited Session: Role of Data, Evidence and Analytics in Systems Modeling	
	Chair(s): Ozge Karanfil Paulo Goncalves	

115-1559 The Making of Practice Guidelines: Endogenous Dynamics of Evidence, Policy and Practice in Population Screening

Ozge Karanfil, Assistant Professor, Koç University, Turkey

Practice guidelines for routine screening are contentious and often change over time. Some tests are over- or underused, with clinical practice persistently deviating from evidence-based guidelines. We develop an integrated, broad boundary feedback theory explaining why some tests are over- while others are underused contrary to available scientific evidence.

115-1641 Platform Startup Strategy: New Product Development Investments, Pricing, and Metrics

Burcu Tan Erciyes, Associate Professor, University of New Mexico, United States

Edward Anderson, Professor, University of Texas Austin, United States

Geoffrey Parker, Professor, Dartmouth College, United States

We study a two-sided platform startup's optimal new product development investment and pricing decisions over a multiperiod life-cycle. We characterize optimal dynamic policies for different monetization models (commission vs 1- or 2-sided subscriptions) and ecosystem regimes including business-to-consumer vs. business-to-business, varying same-side and cross-side externalities, and product development agility.

Tuesday, 11:30 AM - 01:00 PM

115-1678 How Decentralized Trials Fit Into and Alter the Current Clinical Development Landscape: A Systems View

Lidia Betcheva, Student, University of Cambridge, United Kingdom
Feryal ERHUN, Professor, Cambridge University, United Kingdom
Kenneth Getz, Professor, TUFTS UNIVERSITY, United States
Jennifer Kim, Assistant Professor, TUFTS UNIVERSITY, United States
Nektarios Oraiopoulos, Lecturer, Cambridge University, United Kingdom

This paper provides an overview of decentralized clinical trials (DCTs), emphasizing how they fit into and alter the current clinical development landscape. We propose a conceptual framework that employs systems thinking to evaluate the impact of trial decentralization on key stakeholders through a reiterative assessment of pain points.

115-1971 Collaborative Learning and Decision-Making on Pricing and Recommendation: A Simple Framework for Planning

Junyu Cao, Assistant Professor, University of Texas Austin, United States

We formulate a collaborative learning and decision-making problem involving contextual information. In current business practices, pricing and recommendation decisions often are made jointly by multiple teams in sequence. We propose a simple collaboration framework that integrates the learning about decision-making in an unknown environment. Numerical studies validate the superior performance.

Invited Session

227	Tuesday, 11:30 AM - 01:00 PM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Modeling in Logistics Management	
	Chair(s): Javier Rubio	

115-0716 Mean-Variance Optimal Base-Stock Policies

Yueqin Zhong, Student, Rutgers University, United States
Andrew Benton, Data Scientist, Rutgers University, United States
Melike Baykal-Gursoy, Professor, Rutgers University, United States

We consider infinite horizon inventory control under mean-variance performance criterion. Firstly, for the single period case, we show under certain conditions on the demand distribution that base-stock policies are optimal regardless of the coefficient of the variance term. We, then extend the result to infinite horizon problems.

115-0717 Supply Chain Planning: A Case for Hybrid Cross-Docks

Manoj Vanajakumari, Associate Professor, University of North Carolina Wilmington, United States
Haoying Sun, Associate Professor, University of Kentucky, United States
Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

A Hybrid Cross Dock (HCD) facility provides an option for a company to store inventory for a period of time without incurring inventory holding costs. The objective of this research is to provide a near-optimal or an optimal solution that minimizes the total logistics and inventory related costs,

115-0834 Improving Trip Distribution Modeling with Sparse Regression

Javier Rubio, Assistant Professor, University of North Texas, United States
Jesús Muñuzuri, Professor, Universidad De Sevilla, Spain

We explore how to increase the accuracy of trip distribution models by means of gravity models with data-driven deterrence functions. We test these techniques with interregional freight data from Spain and obtain an improvement in performance of up to 14% over the models generated with predefined deterrence functions.

115-1442 Deep Learning for Real-time Probabilistic Traffic Congestion Prediction

Pedro Cesar Lopes Gerum, Assistant Professor, Cleveland State University, United States
Andrew Benton, Data Scientist, Rutgers University, United States
Melike Baykal-Gursoy, Associate Professor, Rutgers University, United States

Transportation systems depend on timely and accurate traffic predictions to provide travelers with a reliable and satisfactory experience. We propose a new probabilistic deep learning architecture for traffic density forecasting that is significantly more general, reliable, and accurate than traditional approaches. They produce distributions that may improve congestion mitigation practices.

Invited Session

228	Tuesday, 11:30 AM - 01:00 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Navigating the Energy Transition through Smart Asset Management	
	Chair(s): Rob Basten Ragnar Eggertsson	

115-1028 Managing Energy Resource Upgrading Decisions under Government Regulation and Emerging Technologies

Ragnar Eggertsson, Student, Eindhoven University of Technology, Netherlands
Rob Basten, Associate Professor, Eindhoven University of Technology, Netherlands
Alan Scheller-Wolf, Professor, Carnegie Mellon University, United States
Nicola Secomandi, Professor, Rice University, United States

Tuesday, 11:30 AM - 01:00 PM

We introduce a novel model to study how government regulations and emerging technologies influence power producers' capacity related choices, such as keeping, upgrading, or decommissioning their power plants. Through a numerical and theoretical analysis, we gain insight into how external factors influence optimal power plant management.

115-1131 How Do Robots Affect Firms' Innovation Performance? Evidence from Spanish Manufacturers

Yiyao Zhou, Student, UCL School of Management, Great Britain
Bilal Gokpinar, Professor, University College London, United Kingdom

This paper finds that robot use has a negative effect on manufacturing firms' process innovation. This effect is smaller for older firms and is only salient for complex manufacturing, rather than light manufacturing or heavy manufacturing. These results points to a potential mechanism is through reducing human involvement.

115-1476 A longitudinal perspective on Asset Life Cycle decision-making

Jan Braaksma, Associate Professor, University of Twente, Netherlands
Willem Haanstra, Assistant Professor, University of Twente, Netherlands
Leo van Dongen, Professor, University of Twente, Netherlands

The energy transition calls for strategic planning and re-alignment of energy grids. A longitudinal research project spanning over ten years, shows how Asset Life Cycle decision-making has aided a Dutch grid operator in successfully evaluating scenarios for the energy transition through Asset Management Planning and Life Cycle Value-based investment decision-making.

Invited Session

229	Tuesday, 11:30 AM - 01:00 PM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Socially Responsible Supply Chains	
	Chair(s): Tim Kraft	

115-0643 Buyer-Imposed and Supplier-Initiated Social Responsibility Codes of Conduct

Han Zhang, Assistant Professor, Michigan State University, United States
Mevan Jayasinghe, Associate Professor, Michigan State University, United States
Sriram Narayanan, Professor, Michigan State University, United States

A buyer procuring from a socially irresponsible supplier will impose the buyer's code of conduct on the supplier. The supplier may voluntarily adopt a code of conduct to signal social responsibility. We show in equilibrium the buyer always waives the buyer's code when the supplier has adopted a voluntary code.

115-0657 Buyer Engagement in a Supplier's Social Responsibility Risk Management: Prevention, Detection, and Remediation

Vincent (Junhao) Yu, Post Doc/Researcher, North Carolina State University, United States
Tim Kraft, Associate Professor, 2801 Founders Dr, United States

We study how retailers can proactively manage their suppliers' responsibility risk. We focus on a retailer's risk management strategy and consider three tactics the retailer can deploy—prevention, detection, and remediation—and study how combining the three can help the retailer achieve optimal results.

115-1255 Audit and Compliance in Supply Chains with Damage Cost Sharing under Supplier's Responsibility Standards

Prashant Chintapalli, Assistant Professor, Ivey Business School, Canada
Yang Li, Assistant Professor, Richard Ivey Business School, Canada
Hubert Pun, Associate Professor, University of Western Ontario, Canada

What is the impact of buyer audits on supplier compliance when buyer shares its damages with the supplier, e.g., through damage liquidation? Which of the audit mechanisms, independent, joint, or shared performs better under these circumstances? We examine these issues regarding buyer audits and supplier compliance in a B2B setup.

115-1969 Operational Challenges faced by Social Enterprises in India

Bhavani Shankar Saripalli, Associate Professor, Indian Institute of Management Indore, India
Vinaysingh Chawan, Assistant Professor, Indian Institute of Management Indore, India

This paper covers operational challenges faced by six large Social Enterprises working across three sectors in India. Operational challenges at production, procurement, processing, and distribution stages were identified and suitable solutions have been proposed. In-depth interviews with CEOs of six social enterprises were conducted to develop a conceptual model.

Invited Session

232

Tuesday, 02:15 PM - 03:45 PM, Celebration 1

Track: Agriculture and Food Supply Chains

Invited Session: **Sustainability in Agriculture**

Chair(s): Erkut Sonmez

115-0260 Dynamic Irrigation Management Under Temporal and Spatial Variability

Erkut Sonmez, Associate Professor, University of Nebraska Lincoln, United States

Baris Ata, Professor, University of Chicago, United States

Derek Heeren, Associate Professor, University of Nebraska Lincoln, United States

Agricultural productivity must improve significantly soon following increasing food demand. One way to improve productivity is irrigation. However, freshwater scarcity, increasing costs, and climate change necessitate sustainable and efficient methods for irrigation. We study dynamic irrigation management under uncertainty considering temporal variability and spatial soil heterogeneity of the field.

115-0263 Plastic Recycling in Agriculture Industry

Yinping Mu, Professor, Yangtze Delta Region Institute (Huzhou) UESTC, China

Wenli Xiao, Assistant Professor, University of San Diego, United States

Feifei Shan, Student, University of Science and Technology of China, China

Qiong Chen, Assistant Professor, Southwestern University of Finance and Economics, China

In this study, we compare three prevailing forms of agricultural film recycling: Penalty Scheme, Reward Scheme and Service Scheme. Our results suggest the social planner should set a sufficiently high penalty if the manufacturer is responsible for collection and a moderate penalty if the farmer is responsible for collection.

115-0316 Industrial Water Recycling: Optimal Capacity Amid Water Scarcity

Sandra Buzon-Vargas, Student, Texas A&M University College Station, United States

Neil Geismar, Professor, Texas A&M University College Station, United States

This paper, motivated by the growing societal concern about freshwater availability, develops a stochastic optimization model to find a firm's optimal water recycling capacity decisions. We find the optimal water recycling capacity and assess how that optimal choice is affected by different regulatory instruments.

115-0691 Enabling Sustainable Cultivation while Mitigating Malnutrition from India

Sanchita Das, Student, University of Washington, United States

Masha Shunko, Associate Professor, University of Washington, United States

Motivated by recent protests against Farm Laws in India, we study role of government policy in farmers' cultivation choices. Using various policy instruments, we model an optimal contract that incentivizes farmers to diversify cultivation towards agro-ecologically sensitive alternatives. These alternatives are nutritionally wholesome and can also address malnutrition at scale.

Invited Session

233

Tuesday, 02:15 PM - 03:45 PM, Celebration 2

Track: Behavioral Operations Management

Invited Session: **Information and Behavioral Operations Management**

Chair(s): Changyue Luo

115-0376 The Role of Governance Mechanisms in Improving Green Innovations

Zuoming Liu, Associate Professor, University of North Georgia, United States

Huaqing Wang, Associate Professor, Palm Beach Atlantic University, United States

Building on information-processing perspective and contingency theory, this study empirically examines the impact of green innovation complexity on performance and how proper governance mechanisms can properly align with the complexity to improve innovation capability. This study provides theoretical contribution and managerial implications regarding green innovations in an intra-organizational setting.

115-1132 Informativeness of Motor Response Dynamics in Optimal Stopping Problems

Ilkka Leppanen, Assistant Professor, Aalto University, Finland

Tianqi Hu, Student, Loughborough University, United Kingdom

We experimentally study decision conflict in revenue management and sequential search problems. We represent decision thresholds by motor response dynamics, i.e. swiping right or left to accept or reject a decision proposal. This novel method is informative of behaviour and decision thresholds and is based on models of evidence accumulation.

115-1233 The Impact of Economic Insecurity on Covid-19 Mitigation Efforts

Kellas Cameron, Assistant Professor, University of South Florida, United States

Decentralized Covid-19 mitigation efforts led to differences in economic impacts between US states. This study looks at how the efficacy of different lockdown protocols, social distancing mandates, and mask requirements varied dependent on state culture, and demonstrates how a state's view of economic insecurity significantly affected economic.

115-2051 Strategic importance of diversity in academia and industry

Ram Tewari, Professor, University of Miami, United States

Tuesday, 02:15 PM - 03:45 PM

With changing demography, diversity is natural and so it has to be accepted and respected . It is a challenge for stakeholders, academia and industry b that future workforce will be increasingly diverse. How to treat all persons fairly and encourage equitable participation without any discrimination.

Invited Session

234	Tuesday, 02:15 PM - 03:45 PM, Celebration 3	Track: Healthcare Operations Management
	Invited Session: Incorporating Patient Behaviors	
	Chair(s): Pengyi Shi Yue Hu	

115-0726 Structural Estimation of Kidney Transplant Candidates' Quality of Life Scores

Baris Ata, Professor, University of Chicago, United States

Yue Hu, Post Doc/Researcher, University of Chicago, United States

Cem Randa, Post Doc/Researcher, (CIF:ESG50985993), United States

We develop a framework for assessing the impact of changes to the deceased-donor kidney allocation policy taking into account transplant candidates' endogenous organ acceptance behavior. Specifically, we construct a dynamic structural model of transplant candidates' acceptance/rejection decisions for organ offers, and perform various counterfactual studies to assess policy changes.

115-0742 Heterogenous Impacts of Vaccine Rollouts on Demand for Public Transportation

Huaiyang Zhong, Assistant Professor, Virginia Tech, United States

Guihua Wang, Assistant Professor, University of Texas Dallas, United States

Tinglong Dai, Professor, Johns Hopkins University, United States

Public transit ridership tumbled amid the COVID-19 pandemic, contributing to enormous budget deficits. We collect data from multiple sources and leverage unique features of the COVID-19 vaccination process to identify an instrumental variable. We demonstrate the significant but heterogenous impacts of vaccine rollouts on the demand of public transportation.

115-1029 Mitigating Abandonment in Online Services: A Randomized Lab Experiment on Sunk Cost and Delay Announcement

Jimmy Qin, Student, Columbia University, United States

Carri Chan, Professor, Columbia University, United States

Jing Dong, Associate Professor, Columbia University, United States

Previous research has shown that telemedicine patients are more likely to abandon when facing in-clinic delays. Through an experiment on willingness to wait for a reward, we find that injecting sunk cost, providing delay announcement, or utilizing both levers are equally effective in significantly decreasing the abandonment rate.

115-1898 Artificial Intelligence on Call: The Physician's Decision on Whether to Use AI in Clinical Practice

Tinglong Dai, Professor, Johns Hopkins University, United States

Shubhanshu Singh, Associate Professor, Johns Hopkins University, United States

Physicians are increasingly using artificial intelligence (AI) systems to aid their medical decision-making. Using AI can also change the physician's legal liability in the event of patient harm. This paper examines a physician's decision regarding whether to use AI when prescribing a treatment plan for a patient.

Contributed Session

235	Tuesday, 02:15 PM - 03:45 PM, Celebration 4	Track: Healthcare Operations Management
	Contributed Session: Patient Experience and Health Outcomes	
	Chair(s): Sriram Thirumalai	

115-0349 Less is More? Effects of Clinical Practice Variation on Patient-outcomes: The Mediating Role of Length-of-Stay

Qi Wang, Student, Xi'an Jiaotong University, China

Sarah Zheng, Assistant Professor, University of Victoria, Canada

Anita Carson, Professor, Boston University, United States

Eitan Naveh, Professor, Technion Israel Institute of Technology, Israel

This study explores when and how variations in clinical practice relate to patient-outcomes. Using data from over 39,000 inpatient samples we investigate practice variation's impacts on patient-outcomes and length-of-stay deviation, and the moderating role of practice variation. Our findings help improve practice operations and reduce waste in the healthcare system.

115-1206 Patient Insurance Status, Healthcare Procedures, and Patient Outcomes: An Empirical Study of Providers' Behavioural Biases

Subhankar Saha, Student, Indian Institute of Management Bangalore, India

Sriram Thirumalai, Associate Professor, Texas Christian University (TCU), United States

Sarang Sunder, Associate Professor, Texas Christian University (TCU), United States

Do healthcare providers' behavioural biases exacerbate the variability in the standardised diagnostics across patients, even within the same diagnostic category? This study examines the impact of patient insurance on the number of procedures after introducing the Hospital Value-Based Purchase (HVBP) Program using the State Inpatient Database of Florida.

115-1429 Patient satisfaction as a source of competitive advantage

Ayah Eyalawwad, Student, University of Jordan, Jordan

Sarah Awwad, Student, Qatar University, Qatar

Tuesday, 02:15 PM - 03:45 PM

Abdulkareem Awwad, Associate Professor, Qatar University, Qatar

This study aims to investigate the causal relationship between patient satisfaction and the competitive advantage of healthcare organizations. The results of the data analysis provided empirical evidence that patient satisfaction will be reflected in the different building blocks of the competitive advantage including efficiency, quality, innovation, and customer responsiveness.

115-1870 An Empirical Study of Patient Navigation Services: A Service Impact Chain Perspective

Ying Fan, Associate Professor, University of Colorado Colorado Springs, United States

Patient navigation enables patients to receive coordinated care in fragmented healthcare systems. We extend the Service Profit Chain framework to Service Impact chain to study success factors, patient navigator effectiveness, and their service impact beyond profitability. Survey research is utilized to collect data from a national patient navigator network.

Invited Session

236	Tuesday, 02:15 PM - 03:45 PM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Applied Analytics in Healthcare	
	Chair(s): Christopher Sun	

115-1904 Studying the Effect of Team Familiarity in Surgical Teams

Gulin Tuzcuoglu, Student, University of Chicago, United States

Dan Adelman, Professor, Booth School of Business, United States

Cagla Keceli, Student, University of Chicago, United States

Kiran Turaga, MD, MPH, Yale University, United States

Hunter Witmer, MD, University of Chicago, United States

We study the effect of team familiarity in surgical teams to maximize team performance. Our approach takes the team members' individual and collaborative experience into account, which we quantify using a novel metric. We report on results based on data from a high-volume academic medical center.

115-2096 Optimizing intra-hospital patient transport services

Martin Copenhaver, Research Scientist and Lecturer, Massachusetts General Hospital and MIT, United States

Retsef Levi, Professor, MIT, United States

Christopher Sun, Assistant Professor, University of Ottawa, Canada

Cecilia Zenteno, Senior Manager, Data & Analytics, (CIF:ESG50985993), United States

Intra-hospital patient transportation services are an integral part of daily logistic activities in a hospital, facilitating patient flow. Suboptimal transport practices and transport delays can compromise hospital operations and quality of care. In this project, we propose analytical frameworks to address primary drivers of transport delays at Massachusetts General Hospital

115-2098 Benefits of Adapting to Demand Disruptions in a Hospital Pharmacy Inventory System

Lauren Czerniak, Student, University of Michigan - Ann Arbor, United States

Mariel Lavieri, Associate Professor, University of Michigan - Ann Arbor, United States

Mark Daskin, Emeritus Professor, University of Michigan - Ann Arbor, United States

Eunshin Byon, Associate Professor, University of Michigan Ann Arbor, United States

Karl Renius, Associate Professor, University of Michigan, Ann Arbor, United States

The criticality and price of a drug, as well as supply and demand disruptions, make inventory decision-making challenging. We find that adaptive inventory policies generally have a greater influence on drugs with an unreliable supply chain. The drug's criticality-price profile dictates whether the influence is beneficial or consequential.

115-2099 Consequences of Adapting to Demand Disruptions in a Hospital Pharmacy System -

Lauren Czerniak, Student, University of Michigan - Ann Arbor, United States

Burgunda Sweet, Professor, University of Michigan, College of Pharm, United States

Jenn Leja, Post Doc/Researcher, University of Michigan - Ann Arbor, United States

Matthew Tupps, Lecturer, University of Michigan - Ann Arbor, United States

We find that adaptive inventory policies generally have a greater influence on drugs with an unreliable supply chain. The drug's criticality-price profile dictates whether the influence is beneficial or consequential.

115-2155 Got (Optimal) Milk? Pooling Donations in Human Milk Banks with Machine Learning & Optimization

Timothy Chan, Professor, University of Toronto, Canada

Rafid Mahmood, Assistant Professor, Ottawa University, Canada

Deborah O'Connor, Professor, University of Toronto, Canada

Debbie Stone, Professor, Sinai Health, Canada

Sharon Unger, Professor, University of Toronto, Canada

Rachel Wong, Student, University of Toronto, Canada

Ian Yihang Zhu, Student, University of Toronto, Canada

Donor milk's macronutrient content is critical to infant development but varies substantially. To reduce this variance, milk banks pool multiple donations together to create a product. We propose a data-driven framework combining machine learning and optimization to predict each donation's macronutrient content then optimally combine them into pool.

Invited Session

237	Tuesday, 02:15 PM - 03:45 PM, Celebration 6	Track: Information Systems and Operations Management
	Invited Session: Panel: Recent Applications of Machine Learning in Business Research	
	Chair(s): Amit Mehra	

115-2117 Panel: Recent Applications of Machine Learning in Business Research

Amit Mehra, Professor, University of Texas Dallas, United States
 Emaad Manzoor, Assistant Professor, Cornell University, United States
 Guihua Wang, Assistant Professor, University of Texas Dallas, United States
 Harpreet Singh, Assistant Professor, University of Texas at Dallas, United States
 Edward McFowland III, , ,
 David Bergman, Associate Professor, University of Connecticut, United States

The panel has a dual objective: (1) Discuss how ML can strengthen econometric approaches for better causal inference with observational data; (2) How and what ML approaches can be used by researchers to solve challenging business problems. Panelists: 1) Emaad Manzoor - Cornell University 2) Guihua Wang - UT Dallas 3) Harpreet Singh - UT Dallas 4) Edward McFowland III - Harvard Business School

Invited Session

238	Tuesday, 02:15 PM - 03:45 PM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: College of Sustainable Operations Student Paper Competition	
	Chair(s): Shouqiang Wang	

115-0089 Allocation of Funds in Bilevel Subsidy Welfare Programs

Wei Wei, Student, University of Massachusetts Amherst, United States
 Priyank Arora, Assistant Professor, University of South Carolina, United States
 Senay Solak, Associate Professor, University of Massachusetts Amherst, United States

We study allocation of available and expected additional funds by a funding agency among various service agencies within bilevel, one-to-many, and service-focused subsidy welfare programs. We compare the resulting social impact when the funding agency has versus has no equity consideration while aiming to generate a greater overall social impact.

115-0124 Quality Costs of Fuel Efficiency Improvements in the Automobile Industry

Donggyu Jeon, Student, Indiana University Bloomington, United States
 George Ball, Associate Professor, Indiana University Bloomington, United States
 Gil Souza, Professor, University of Tennessee Knoxville, United States

In this study, we empirically examine the impact of firms' efforts to improve the environmental performance of a vehicle (measured as MPG) on product quality (measured as the number of quality complaints reported) in the automotive industry. We provide operational and strategic managerial implications of improving sustainability on product quality.

115-0297 Playing Fair? Environmental Impacts and Practices of Facilities in Minority Communities.

Abhinav Shubham, Student, Georgia Institute of Technology, United States
 Ravi Subramanian, Professor, Georgia Tech, United States

Drawing on comprehensive US EPA and Census data, we examine the association between presence of substantial racial minority populations in host communities and facility-level environmental impacts and impact-reduction strategies. Our findings offer evidence for firms and policy makers to consider fairness and equity in managing and regulating environmental risks.

115-2146 A Data-driven Approach to Improve Artisans' Productivity

Ben Liu, Student, New York University, United States
 Divya Singhvi, Assistant Professor, New York University, United States
 Somya Singhvi, Assistant Professor, University of Southern California, United States
 Xinyu Zhang, Student, New York University, United States

Collaborating with a rug-manufacturing social enterprise of women artisans in rural India, we consider the problem of optimizing supervisor visit and develop a novel predict-then-optimize framework to improve productivity. We show the existence of a polynomial-time algorithm with competitive ratio of $1-1/\sqrt{e}$, and test the proposed methodology on actual data.

115-2147 The Impact of Climate Change: An Empirical Analysis of Smart Thermostat Data

Michael Blair, Student, Yale University, United States
 Saed Alizamir, Assistant Professor, Yale University, United States
 Shouqiang Wang, Associate Professor, University of Texas Dallas, United States

Using a rich micro-level smart thermostat data we develop models for household's long- and short-term thermostat decisions. We leverage these models to estimate the impact of climate change on consumption by predicting future thermostat behavior. Our analysis estimates that cooling energy usage could rise up to 70% by 2050.

115-2148 Business Model Choice under Right to Repair: Economic and Environmental Consequences

Ece Gulserliler, Student, INSEAD, France
 Atalay Atas, Professor, INSEAD, France

Tuesday, 02:15 PM - 03:45 PM

Luk Van Wassenhove, Professor, INSEAD, France

Right-to-Repair (RTR) regulations require producers to design easy-to-repair products and supply necessary information and parts for consumers to independently undertake repairs. This paper analyzes the effect of RTR on producers' business model choices between ownership and non-ownership models (e.g., leasing), and the implications for producers, consumers, and the environment.

Invited Session

239

Tuesday, 02:15 PM - 03:45 PM, Celebration 8

Track: Empirical Research in Operations Management

Invited Session: Examples of Empirical Research in Emerging Topics

Chair(s): Mahyar Eftekhari

115-0061 Project Networks and Reallocation Externalities

Vibhuti Dhingra, Assistant Professor, York University, Canada

Juan Camilo Serpa, Associate Professor, McGill University, Canada

Harish Krishnan, Professor, University of British Columbia, Canada

A project involves several participants working concurrently on multiple projects, creating a network of otherwise unrelated projects. We show that a seemingly localized disruption, affecting only one project site, eventually causes delays across unrelated projects. Performance-based contracts, which reward contractors for timeliness, exacerbate these externalities by encouraging self-interested resource reallocation.

115-0780 The Impact of Workload on Operational Performance: Empirical Evidence from Last-Mile Delivery

Yuchen Liang, Student, National University of Singapore, Singapore

Stanley Lim, Assistant Professor, Michigan State University, United States

Guodong Lyu, Assistant Professor, Hong Kong University of Science and Technology, China

Chung-Piaw Teo, Professor, National University of Singapore, Singapore

Leveraging a data set of last-mile deliveries from a parcel operator in Singapore, we examine the impact of employees' workload on delivery performance. We find that workload exhibits a U-shape relationship with delivery failure rate. We study moderating factors, subsample analysis, and the workload assignment model for different assignment mechanisms.

115-0842 Empowering the Frontline Health Workers to Tackle Stock-outs

Amir Karimi, Assistant Professor, University of Texas at San Antonio, United States

Anant Mishra, Associate Professor, University of Minnesota, United States

Karthik V. Natarajan, Associate Professor, University of Minnesota, United States

Kingshuk Sinha, Professor, University of Minnesota, United States

In low- and middle-income countries, frontline health workers are frequently tasked with the non-clinical responsibility of inventory management for which they are not adequately trained. Focusing on this context, we analyze novel and proprietary field data from an inventory management training program of frontline health workers in Indonesia.

115-0988 Reducing Greenhouse Gas emissions in Steel Manufacturing: An Intervention-based Study

Gopesh Anand, Professor, University of Illinois Urbana-Champaign, United States

Ujjal Mukherjee, Associate Professor, University of Illinois Urbana-Champaign, United States

Samit Paul, Assistant Professor, Indian Institute of Management Calcutta, India

Alok Raj, Assistant Professor, Xavier Labor Relations Institute, India

SAROJ SINGH, Project head, XLRI Xavier School of Management, India

In this research, we explore how the introduction of Internet of Things (IoT) impacts greenhouse gas emissions in steel manufacturing. Adopting a field experimental setting, we address whether IoT enables operational process improvement and triggers organizational learning.

115-1523 Does governance ease the overhead squeeze experienced by nonprofits?

Iman Parsa, Post Doc/Researcher, INSEAD, France

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

Charles Corbett, Professor, UCLA Anderson School of Management, United States

We investigate the role of governance quality in driving donations to nonprofits using longitudinal data of 38,226 nonprofits during 2010- 2017. In our estimations, we first evaluate and confirm the need to correct for omitted variable bias and then use valid instrumental variables in a fixed-effects 3SLS estimation.

Invited Session

241

Tuesday, 02:15 PM - 03:45 PM, Celebration 10

Track: Revenue Management and Pricing

Invited Session: Algorithmic Causal Inference I

Chair(s): Jinglong Zhao

115-0894 Using Algorithmic Scores to Measure the Impacts of Targeted Promotional Messages

Annie Shi, Student, Washington University in St. Louis, United States

Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

Tat Chan, Professor, Washington University in St. Louis, United States

Haoyuan Hu, Technical Specialist, Alibaba Group, China

Binqiang Zhao, Technical Specialist, Alibaba Group, China

Tuesday, 02:15 PM - 03:45 PM

We propose matching on ML-generated scores used in targeting decisions to measure the effectiveness of targeting promotions. To test our proposed approach, we conducted a large field experiment on targeting promotions with a large retailing platform and showed our proposed matching approach could effectively recover the true causal effects.

115-0895 Estimating Causal Effects Of Long-Term Treatments

Shan Huang, Assistant Professor, Hong Kong University, Hong Kong, China
Chen Wang, Student, Hong Kong University, Hong Kong, China
Yuan Yuan, Assistant Professor, Purdue University, United States
Jinglong Zhao, Assistant Professor, Boston University, United States

In this work, we present a framework to estimate the causal effects of long-term treatments. We establish a longitudinal analogue of the famous surrogate index framework. We showcase how to estimate the effects of long-term treatments by conducting a large-scale search bar experiment.

115-0957 Reducing Marketplace Interference Bias Via Shadow Prices

Ido Bright, Research Scientist, Lyft, Inc, United States
Arthur Delarue, Assistant Professor, Georgia Institute of Technology, United States
Ilan Lobel, Assistant Professor, New York University, United States

We propose a technique for online matching marketplaces to run randomized experiments and obtain meaningful estimates despite marketplace interference. Instead of comparing total value accrued by the treatment and control groups, we instead compare each group's average shadow price in the matching linear program. We show our technique reduces bias.

115-1421 Design of Panel Experiments under Inteference

Tu Ni, Student, National University of Singapore, Singapore
Iavor Bojinov, Assistant Professor, Harvard Business School, United States
Jinglong Zhao, Assistant Professor, Boston University, United States

We present a randomized design of panel experiments under spatial and temporal interference, which is efficient in variance minimization for the causal estimator. Our proposed design has two features: a notion of cluster-based randomization and a balancing of treatment and control assignments.

Contributed Session

242	Tuesday, 02:15 PM - 03:45 PM, Celebration 11	Track: Manufacturing Operations
	Contributed Session: Frontier of Manufacturing Operations	
	Chair(s): Roohollah Younes Sinaki	

115-1816 Re-engineering of 5S Implementation to success

Mohsen Mosayebi, Assistant Professor, Georgia College & State University, United States
Mehrnaz Khalaj Hedayati, Assistant Professor, Georgia College & State University, United States

Implementing lean tools such as 5S relies on learning and continuous improvement. However, many failures occur at this point especially with low-wage operators and high-rate human resource turnover post pandemic. Results from re-engineering 5S, successful project-based implementation in an automotive manufacturing, and derived conceptual model will be presented.

115-1903 Project scheduling under various resource constraints

Nicklas Klein, Student, University of Bern, Switzerland
Mario Gnägi, Post Doc/Researcher, University of Bern, Switzerland
Norbert Trautmann, Professor, University of Bern, Switzerland

The execution of a project often requires two types of resources: renewable resources representing, e.g., staff members or equipment; and production and consumption resources representing, e.g., the project budget. We present a mixed-integer linear programming formulation for scheduling such a project which significantly outperforms state-of-the-art models from the literature.

115-1958 Cellular Manufacturing Design- Toward the application of Industry 4.0

Roohollah Younes Sinaki, Student, Ohio University, United States
Azadeh Sadeghi, Assistant Professor, University of Michigan-Flint, United States

This literature review discusses the placement of cellular manufacturing systems in the industry 4.0 paradigm. Among the existing automated manufacturing systems, reconfigurable cellular manufacturing systems continue to extensively adopt industry 4.0 by developing smart factory and smart product while establishing a strong communication system among suppliers, factories and customers.

Contributed Session

243	Tuesday, 02:15 PM - 03:45 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Contributed Session: National Security	
	Chair(s): Jomon Paul	

115-0111 Domestic Extremism Prevention in the United States: A Policy Framework

Jomon Paul, Professor, Kennesaw State University, United States
Aniruddha Bagchi, Professor, Kennesaw State University, United States

Tuesday, 02:15 PM - 03:45 PM

Absence of a domestic extremism prevention architecture represents a major strategic-policy vulnerability in efforts to counter terrorism within the United States. We focus on policies that mitigate this problem. We evaluate how radicalization occurs due to social media, political polarization, attitudes towards immigration, state of economy, religious freedom, among others.

115-1436 Leveraging E-Government data to ensure equitable access to public services during a slow-onset disaster

Duygu Pamukcu, Post Doc/Researcher, Virginia Tech, United States

Christopher Zobel, Professor, Virginia Tech, United States

Municipal service systems should address community needs by maintaining services even during disaster events. To support this, we use time series modeling to analyze a large-scale publicly available data set from New York City and examine the impacts on municipal service provision during the first year of the COVID-19 pandemic.

115-1535 Humanitarian and national security components in a refugee crisis

Luiza Cunha, Post Doc/Researcher, Universidade de São Paulo, Brazil

Afonso Silva, Student, São Paulo University, Brazil

Irineu Brito Jr, Professor, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil

Hugo Yoshizaki, Retired, Universidade de São Paulo, Brazil

The Operation Welcome has both a humanitarian and security component in receiving, sheltering and socio-economically inserting Venezuelan immigrants in Brazil. Through a casual loop diagram, this research provides dynamic hypotheses and discussion on these components. Results contribute with insights for practical improvements in the operation.

115-1561 Selection of Brazilian Air Force Aircraft in Response to a Humanitarian Crisis on Brazilian Borders.

Newton Souza, Student, São Paulo University, Brazil

Hugo Yoshizaki, Retired, Universidade de São Paulo, Brazil

Luiza Cunha, Post Doc/Researcher, Universidade de São Paulo, Brazil

Irineu de Brito Junior, Associate Professor, Sao Paulo State University - UNESP, Brazil

An optimization model is developed to evaluate the Brazilian Air Force effort in transporting cargo for the strategic initial mobilization of the humanitarian response in border regions. We run the model for different crisis scenarios to evaluate the impact of response times and demand variation, critical for humanitarian logistics.

Contributed Session

244	Tuesday, 02:15 PM - 03:45 PM, Celebration 13	Track: Teaching/Pedagogy in POM
	Contributed Session: Games in Operations and Supply Chain	
	Chair(s): Yao Zhao	

115-0805 FASHION MANAGER: A BOARD GAME TO LEARN OPERATIONS MANAGEMENT

Ana Castillo, Assistant Professor, University of Granada, Spain

Leopoldo Gutierrez, Professor, University of Granada, Spain

Matilde Ruiz-Arroyo, Associate Professor, University of Granada, Spain

Carlos Albacete-Saez, Associate Professor, University of Granada, Spain

Jessica Braojos, Assistant Professor, University of Granada, Spain

"Fashion Manager" is a board game conceived as a gamification tool for Operations Management courses. This strategy game will lead students to learn a complete range of contents, organized around a managerial process covering the whole value chain and affected by external factors from the general and competitive environment.

115-1274 In-class Discovery Exercise: Variation, Excess Capacity, and Waiting

Brad Meyer, Associate Professor, Drake University, United States

Using an online simulation of a single channel queue, students learn about the role of variation and buffer capacity in causing and managing waiting. Students compare wait time at 50%, 75% and 90% capacity and compare systems with and without variation in service and inter-arrival times.

115-1724 FloraPark - A Competitive and Collaborative Supply Chain Simulation

Yao Zhao, Professor, Rutgers University, United States

Olena Rudna, Lecturer, New Jersey Inst of Technology, United States

Arim Park, Assistant Professor, North Carolina A&T State University, United States

Ju Myung Song, Assistant Professor, University of Massachusetts Lowell, United States

Supply chain collaboration is ambiguous due to the conflict of interests among the trading partners. At the same time, competition from other supply chains in the market forces them to find the effective way for a win-win outcome. The FloraPark simulation imitates the international fresh-flower supply chain and teaches.

115-1893 The Hunger Chain: A competitive simulation for teaching supply chain management

Yao Zhao, Professor, Rutgers University, United States

Kim Minseok, Student, Rutgers Business School, United States

Shortage gaming, supply chain competition, and supply rationing are crucial topics in supply chain curricula but also challenging for instructors to deliver. We develop an online instructional game, the Hunger chain, which encourages the participation of students through an action-based competitive simulation in experiential learning of these topics effectively.

Invited Session

245	Tuesday, 02:15 PM - 03:45 PM, Celebration 14	Track: Service Operations
	Invited Session: Service Operations and Human Behavior	
	Chair(s): Craig Froehle David Rea	

115-0393 Splurging with your Side Hustle: The Effects of Compensation Structure on Consumption Behavior

Paige Tsai, Student, Harvard Business School, United States
Ryan Buell, Professor, Harvard Business School, United States

We examine how the source and nature of individuals' compensation influences their consumption behavior. We find that individuals primarily purchase relative necessities with their primary income source and relative indulgences with their supplementary income sources. This effect is robust within and across all household income levels.

115-0572 Personality Determinants of Antisocial Behavior in Online Service Settings

Andrew Harrison, Associate Professor, University of Cincinnati, United States
Craig Froehle, Professor, University of Cincinnati, United States
David Rapien, Associate Professor, University of Cincinnati, United States

We examine how personality moderates responses to negative feedback in online service settings like social media and peer-grading platforms. A field experiment reveals how personality traits related to the Dark Triad influence whether individuals retaliate against others, work harder to win approval, or quietly remove themselves from the environment.

115-0986 Peak Event Self-Scheduling: Bookend Behavior and Perceived Control Implications for Demand

Mike Dixon, Associate Professor, Utah State Univ, United States
Liana Victorino, Associate Professor, University of Victoria, Canada

Customers self-schedule peak events for experiential services in a predictable manner either the beginning or the end which can lead to a high degree of demand fluctuation for the peak event. We conduct an exploratory study and a scenario-based experiment to test if perceived control influences demand management.

115-1840 Multitasking in Livechat Support Centers

Robert Batt, Associate Professor, University of Wisconsin-Madison, United States
Santiago Gallino, Assistant Professor, The Wharton School, United States

We explore the effect of multitasking on system performance in a livechat customer contact center. We find that while multitasking leads to increased chat handle time, the effect is does not increase linearly with multitasking level. We show that this can effect the optimal work assignment rule.

Invited Session

246	Tuesday, 02:15 PM - 03:45 PM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Interface of OM, IS, and Marketing Research	
	Chair(s): Yuan Dong	

115-1447 Product Pricing and Live Streaming E-commerce Frequency Decisions

Yuan Dong, Student, Temple University, United States
Guohou Shan, Student, Temple University, United States
Subodha Kumar, Professor, Temple University, United States

Influencers can demonstrate products and interact with customers on Live streaming e-commerce (LSE) platforms, reducing product uncertainty and raising the consumers' purchasing intention. In this research, we analytically model product-oriented and influencer-oriented customers to understand how online stores alter LSE frequency and pricing decisions to boost their revenue better.

115-1623 Automated Process Improvement Based on Unstructured Data

Alexander Rochlitzer, Student, Kühne Logistics University, Germany
Henrik Leopold, Associate Professor, Kühne Logistics University, Germany

We explore how process-related weaknesses described in unstructured data like customer support chats or social media posts can be aligned with data from (information) systems to gain insights into root causes of the weaknesses and to automatically develop improvement recommendations for an organisation's operations.

115-1708 Using Marketplace Store Banners

Hao Su, Assistant Professor, University of New Orleans, United States
Martin Dresner, Professor, University of Maryland, United States

The study investigates how employment of the marketplace's store banner impacts sales performance for both private label products and non-private label products on an online marketplace. We find that directly branding private labels and using store banners on non-private label products are both associated with greater sales performance.

115-1747 Economics of Federated Learning in Online Advertising

Luoying Chen, Student, University of Texas at Dallas, United States
Jianqing Chen, Professor, University of Texas at Dallas, United States
Amit Mehra, Professor, University of Texas Dallas, United States

Tuesday, 02:15 PM - 03:45 PM

Federated learning (FL) techniques allow firms to train machine learning models without collecting user data. In this work, we study the economic implications when a platform adopts FL in online advertising. We examine how such adoption affects the competition among advertisers and all the players' payoffs.

Invited Session

247	Tuesday, 02:15 PM - 03:45 PM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Data-Driven Decision Making in Inventory and Supply Chain Systems	
	Chair(s): Yuexing Li	

115-0551 The Impact of Recommending High-quality Content on Consumption and Production on User-generated content Platforms

Zhiyu Zeng, Student, Tsinghua University, China
Zhiqi Zhang, Student, Washington University in St. Louis, United States
Dennis Zhang, Associate Professor, Washington University in St. Louis, United States
Tat Chan, Professor, Washington University in St. Louis, United States

While user-generated content (UGC) platforms provide users with high-quality content to increase content consumption, the impact of consuming high-quality content on the users' own productive behavior is seldom investigated. We examine how users' both content consumption and production are affected by peer users' content quality, and investigate the mechanism behind.

115-0555 Efficient Algorithms for Minimizing Compositions of Convex Functions and Random Functions with NRM Applications

Zikun Ye, Student, University of Illinois at Urbana Champaign, United States
Xin Chen, Professor, Georgia Institute of Technology, United States
Yifan Hu, Student, University of Illinois at Urbana Champaign, United States
Niao He, Assistant Professor, ETH Zürich, Switzerland

we study a class of nonconvex stochastic optimization, where the objective function is a composition of a convex function and a random function. Leveraging an (implicit) convex reformulation via a variable transformation, we design a near-optimal Mirror Stochastic Gradient algorithm, and apply MSG in network revenue problems.

115-0766 A Practical End-to-End Inventory Management Model with Deep Learning

Meng Qi, Assistant Professor, Cornell University, United States
Yuanyuan Shi, Assistant Professor, University of California San Diego, United States
Yongzhi Qi, Research Scientist, ?, China
Max Shen, Professor, University of California Berkeley, United States

We investigate data-driven multi-period inventory replenishment problem with uncertain demand and vendor lead time (VLT) and propose a one-step end-to-end (E2E) framework that uses deep-learning models to output the suggested replenishment amount directly from input features without any intermediate step.

115-1375 A Graph Neural Network Approach for Predicting Supply Chain Network Performance

Shuyu Chen, Student, Duke University, United States
Yuexing Li, Assistant Professor, Johns Hopkins University, United States
Jeannette Song, Professor, Duke University, United States
Yehua Wei, Associate Professor, Fuqua School of Business, United States

Graph Neural Network (GNN) is a new machine learning tool that leverages graphical data structure for learning and prediction. We are the first to apply GNN to predict supply chain network performance by developing a novel graph transformation approach. The results indicate that our approach significantly outperforms several benchmarks.

Invited Session

248	Tuesday, 02:15 PM - 03:45 PM, Coral Spring 2	Track: Emerging Topics in Operations Management
	Invited Session: Nanostore empirical studies: retail services for the poor in emerging markets	
	Chair(s): Jan Fransoo	

115-0151 Sales Increase Through Value-Added Services In The Nanostore Retail Channel

Rafael Escamilla, Student, Tilburg University, Netherlands
Jan Fransoo, Professor, Tilburg University, Netherlands
Robert Rooderkerk, Associate Professor, Rotterdam School of Management, Netherlands

We investigate an initiative by a manufacturer in Latin America to encourage the provision of value-added digital services by nanostores - mom & pop grocery retail microbusiness in emerging markets. Through detailed econometric analyses, we uncover how this initiative influences spatial competition between nanostores and convenience stores.

115-0154 Supply chain transformation and technology management challenges in rural Chinese nanostores

Guanyi Lu, Associate Professor, Florida State University, United States
Xitong Guo, Professor, Harbin Institute of Technology, China
Veronica Villena, Associate Professor, Arizona State University, United States
Douglas Vogel, Professor, City U of HK, China
Gregory Heim, Professor, Texas A&M University College Station, United States

Tuesday, 02:15 PM - 03:45 PM

We study how an IT procurement system prescribed by the Chinese government for rural nanostores was used initially and how it evolved over time. We provide implications for IT research about technology management in rural developing areas and for managers to recognize pitfalls of managing IT projects in poor areas.

115-0158 Agent-choice in last-mile delivery of food security programs: impact, usage and implications

Rakesh Allu, Student, Cornell University, United States

Maya Ganesh, Assistant Professor, Indian Institute of Management Ahmedabad, India

Sarang Deo, Associate Professor, Indian School of Business, India

Sripad Devalkar, Associate Professor, Indian School of Business, India

Last-mile delivery in food security programs is executed through pre-assigned agents who enjoy monopoly power. We examine the impact of replacing pre-assignment with agent-choice. Using a natural experiment in India, we find a 6.6% increase in monthly uptake of grain. 4% of the increase is attributable to exercise of choice.

115-2066 Food Subsidies at the Base-of-the-Pyramid: Take-up, Substitution and Nutrition

Alp Sungu, Student, London Business School, United Kingdom

Ali Aouad, Assistant Professor, London Business School, Great Britain

Kamalini Ramdas, Professor, London Business School, United Kingdom

What are the nutritional impact and the substitution effect of in-kind food subsidies at the global base of the pyramid markets? To address these questions, we conduct a field experiment in a low-income settlement in Mumbai, India, where we randomly provide individuals with food subsidies and track their purchasing patterns.

Contributed Session

249	Tuesday, 02:15 PM - 03:45 PM, Blue Spring 1	Track: Supply Chain Risk Management
	Contributed Session: COVID-19/Catastrophic Risk	
	Chair(s): Florian Lucker	

115-0321 IDENTIFYING AND RANKING SUPPLY CHAIN RISKS

Zach Zacharia, Associate Professor, Lehigh University, United States

Supply chain risks have increased with the growth in globalization, complexity, and natural disasters. Managers need to identify and prioritize different supply chain risks to develop proper mitigation strategies. This paper uses survey data collected every quarter on ten distinct supply chain risks to rank risks in the supply chain.

115-1456 Exploring Off-Site Stocking Decisions under Catastrophic Risk

Canan Gunes Corlu, Associate Professor, Boston University, United States

Bahar Biller, Senior Scientist, Sas Institute, United States

Elliot Wolf, NA, Chemours Company, United States

Enver Yucesan, Professor, INSEAD, France

We study off-site stocking decisions under catastrophic disruptions. We extend the classical newsvendor model accounting for the demand uncertainty to capture the cost of supply disruption and the cost of recovery. Our comprehensive experimental analysis provides insights for managing inventory under catastrophic risk.

115-1524 Disruption Mitigation and Pricing Flexibility

Oben Ceryan, Senior Lecturer, Bayes Business School, United Kingdom

Florian Lucker, Assistant Professor, Bayes Business School, United Kingdom

We study a firm that is exposed to supply disruptions. During a disruption, the firm may use reserve inventory and/or reserve capacity to serve demand. Further, the firm may increase the price during the disruption. We find that pricing flexibility may complement or substitute the use of inventory and capacity.

115-1617 Supply Chain Resilience and the COVID-19 Pandemic: Examination of Pertinent Variables

Henry Aigbedo, Associate Professor, Oakland University, United States

The COVID-19 Pandemic has negatively impacted global supply chains. As vaccines are administered and people become immune to COVID-19, most firms worldwide are beginning to return back to normal operations. In this exploratory study, we assess this recovery within the context of pertinent supply chain resilience variables.

Invited Session

250	Tuesday, 02:15 PM - 03:45 PM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Service Platform and Sharing Economy	
	Chair(s): Lina Wang	

115-0515 Effects of Digital Freight Matching Apps on Air Freight Performance in Airline/Motor Carrier Coopetition

Zenan Zhou, Assistant Professor, Arizona State University, United States

Xiang Wan, Associate Professor, Ohio State University, United States

Walter Zinn, Professor, Ohio State University, United States

A. Knemeyer, Professor, Ohio State University, United States

Tuesday, 02:15 PM - 03:45 PM

Digital freight matching (DFM) apps have the disruptive power to incumbent participants in the road freight sector. Considering motor carriers and airline carriers cooperate and compete with each other, we are interested to examine the effects of the DFM apps' diffusion in the motor carriers on airline carriers.

115-0956 Modeling Drivers' Choices in a Crowdsourced Delivery System

Lina Wang, Assistant Professor, The Pennsylvania State University, United States
Stanley Lim, Assistant Professor, Michigan State University, United States
Elliot Rabinovich, Professor, Arizona State University Tempe, United States

We model the choices crowdsourced drivers make when selecting order bundles for last-mile delivery. Using operations data from a crowdsourced delivery platform, we empirically identify how crowdsourced drivers build their delivery workloads as a function of pay, delivery locations of the bundles, and distances between the bundles for density.

115-1277 Market Thickness and Delivery Efficiency in Food-delivery Platforms

Ruomeng Cui, Professor, Emory University, United States
Wenchang Zhang, Assistant Professor, Kelley School of Business, United States
Zhanzhi Zheng, Student, UNC Kenan-Flagler Business School, United States

In food delivery platforms, market thickness entails the restaurant density in a geographic area. We study the implications of restaurant density and performances in food delivery platforms. We show that higher market thickness leads to shorter order wait times; it also boosts restaurants' sales and revenues.

115-1866 Supply Constraints and Housing Rental Market Equilibrium in the Sharing Economy

Guofang Huang, Assistant Professor, Purdue University, United States
Jianing Li, Student, Purdue University, United States
Feng (Susan) Lu, Associate Professor, Purdue University, United States
Qianli Xu, Algorithm Engineer, Sany Heavy Machinery Co., Ltd, China

By evidence from Airbnb, we study how supply constraints regulation on sharing platforms affects housing rental market equilibrium, including the impact on the platform's listing and local long-term rental market, in terms of quantity, price, and discussion on social welfare.

Invited Session

251	Tuesday, 02:15 PM - 03:45 PM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Healthcare Policy and Innovation	
	Chair(s): Jingwen Yang	

115-0311 The More Monitoring, the Better Quality? Empirical Evidence From the Generic Drug Industry

Anqi Wu, Assistant Professor, Florida International University, United States
Yixin Iris Wang, Assistant Professor, University of Illinois Urbana-Champaign, United States

This study examines the relationship between inspection frequency and manufacturing quality. While we find a significantly negative impact of inspections on product recalls, this impact is subject to diminishing returns. More importantly, we observe no evidence that supports the negative link between inspections and recalls for high-risk manufacturers.

115-1284 Drug Shortages and New Drug Approvals: An Empirical Investigation

Iva Rashkova, Assistant Professor, Washington University, United States
Panos Kouvelis, Professor, Washington University in St. Louis, United States

We leverage a combination of publicly available data sources to study the link between new drug approvals and drug shortages. We observe a positive correlation between the time-to-recovery for an individual drug-shortage event and the associated drug approval. Our results point to industry-wide capacity and resource allocation trends.

115-1428 Precision Medicine Innovation: An Economic Impediment or a New Model of Drug Innovation?

Jingwen Yang, Assistant Professor, University of Nevada Las Vegas, United States
Anant Mishra, Associate Professor, University of Minnesota, United States

We investigate the impact of precision medicine innovation on drug market performance. In contrast to the conventional wisdom regarding precision medicine contracting the drug market, we find that the introduction of precision indications is associated with significant increases in drugs sales. We further study a key factor moderating such impact.

115-1457 Promoting Generics: Effects on Pharmaceutical Quality

In Joon Noh, Assistant Professor, Penn State University, United States
Hessam Bavafa, Associate Professor, University of Wisconsin-Madison, United States
Christian Blanco, Assistant Professor, Ohio State University, United States

Generic drugs are a cornerstone of affordable healthcare. We examine the pharmaceutical quality effects of the Generic Drug User Fee Amendments (GDUFA), a hallmark legislation enacted by Congress in 2012 that armed the FDA with resources to improve the timeliness of generic drug application reviews.

Invited Session

252	Tuesday, 02:15 PM - 03:45 PM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Operational Excellence in Pharma	
	Chair(s): Oliver von Dzengelevski Matteo Bernasconi	

115-0226 Understanding OPEX in the Pharmaceutical Industry - Peculiarities, Challenges, and Similarities

Thomas Friedli, Professor, University of St. Gallen, Switzerland
 Matteo Bernasconi, Student, Universitat St. Gallen, Switzerland
 Mark Grothkopp, Student, Universitat St. Gallen, Switzerland

Pharmaceutical companies embarking on their OPEX journey profit from several benefits but encounter some challenges too. Based on a database with more than 400 manufacturing facilities, we show how OPEX deployment in the pharmaceutical industry differs from less regulated industries and what are the differences, similarities, and challenges.

115-0227 Predicting Quality Risk in the Pharmaceutical Industry: Adding OPEX Data to the Equation

Matteo Bernasconi, Student, Universitat St. Gallen, Switzerland
 Mark Grothkopp, Student, Universitat St. Gallen, Switzerland
 Thomas Friedli, Professor, University of St. Gallen, Switzerland

Quality risk management is crucial within pharmaceutical manufacturing. Regulators are using predictive models to predict quality risk and assign inspectors to riskier facilities. We provide insights from our two-years research project with the US FDA to investigate the integration of OPEX measures to improve the accuracy of the risk prediction

115-1425 Managing OPEX programs in the Pharmaceutical industry - A comparison to other industries

Mark Grothkopp, Student, Universitat St. Gallen, Switzerland
 Matteo Bernasconi, Student, Universitat St. Gallen, Switzerland
 Thomas Friedli, Professor, University of St. Gallen, Switzerland

Every large company nowadays has some sort of OPEX program. The content, such as applied tools, are in essence the same with slight adaptations depending on industries. The question remains how pharma companies manage these programs differently as they have been a late adopter of OPEX compared to other industries.

Contributed Session

253	Tuesday, 02:15 PM - 03:45 PM, Barrel Spring 1	Track: POM-Marketing Interface
	Contributed Session: Loyalty	
	Chair(s): Ariana Yu	

115-0005 Modular Capacitated Sales Force Deployment

Sven Müller, Professor, Rwth Aachen University, Germany
 Lucas Weber, Student, OVGU, Germany

We present the sales force deployment problem with modular capacities, i.e., we allow for groups of sales representatives at one location. We solve non-linear, semi-infinite mixed integer problem by a branch-and-price algorithm that incorporates Benders decomposition. We find modular capacities not only increase profits but also fairness.

115-1781 Do Non-Compete Clauses Help or Hurt Firms in the Presence of Salesforce Owned Customer Loyalty?

Somnath Banerjee, Assistant Professor, North Dakota State University, United States
 Lin Liu, Professor, Beihang University, China
 Axel Stock, Associate Professor, College of Business, United States

Firms often recruit salespeople to build relationships with customers. In this scenario, customers develop loyalty not only to the firms, but also towards their salespeople. We employ a two-period game theoretic model of duopolistic competition and find that, counterintuitively, the possibility of poaching the competitor's representative can increase firm profits.

115-1932 Does Size Matter for Loyalty Points Redemptions?

Yang Chen, Student, Queen's University, Canada
 Anton Ovchinnikov, Professor, Queens University, Canada
 Nicole Robitaille, Assistant Professor, Queen's University, Canada

Prior research on loyalty programs typically finds rewards increase loyalty, without considering the impact of redemption size and consumer habits. We demonstrate these factors are significant predictors in fostering long-term loyalty, with smaller redemptions often outperforming larger ones. Our results demonstrate redemption is a key lever in loyalty program optimization.

Invited Session

254	Tuesday, 02:15 PM - 03:45 PM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Strategic Decisions in Supply Chains and Platforms	
	Chair(s): Anyan Qi	

Tuesday, 02:15 PM - 03:45 PM

115-0090 Agile Contracting: Managing Incentives under Uncertain Needs

Shivam Gupta, Assistant Professor, University of Nebraska Lincoln, United States
Anupam Agrawal, Associate Professor, Texas A&M University College Station, United States
Jennifer Ryan, Professor, University of Nebraska Lincoln, United States

We capture key features of an agile software development project (e.g., project can be modularized via independent stories; stories are developed in time-boxed sprints; project's requirements can change over time) and characterize an optimal contract. We also compare the performance of the popular T&M contracts with the optimal contract.

115-0383 Sustainable Supply Chain Finance and ESG Performance

Lingxiu Dong, Professor, Olin Business School, Washington Univ., United States
Xiaoyu Wang, Student, Washington University in St. Louis, United States
Fasheng Xu, Assistant Professor, Syracuse University, United States

In order to promote sustainable practices in the supply chain, companies take various supply chain financing methods to encourage their suppliers to comply with the sustainability code. Although originally designed to promote sustainability, we find that, on the contrary, sustainable supply chain finance solutions may discourage suppliers' sustainable practices.

115-0391 Supply Chain Short-Term Financing for Responsible Production at Small and Medium-Sized Enterprises

Xiaole CHEN, Assistant Professor, Sun Yat-sen University, China
Vernon Hsu, Professor, Chinese Univ of Hong Kong, Hong Kong, China
Guoming Lai, Associate Professor, University of Texas Austin, United States
Yang Li, Assistant Professor, Richard Ivey Business School, Canada

In recent years, companies have increasingly used supply chain financing instead of bank financing when engaging with financially constrained suppliers. We investigate the effectiveness of different financing mechanisms at supporting supply chain responsibility.

Invited Session

255	Tuesday, 02:15 PM - 03:45 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Economics in Retail Operations	
	Chair(s): Xiajun Pan Hongseok Jang	

115-0273 Blockchain-enabled Resale

Rong Li, Associate Professor, Syracuse University, United States

Many luxury brands are trying to use Blockchain (e.g., LVMH's Aura, Arianee) to support peer-to-peer resales of their own products. Such Blockchain-enabled resales benefit both consumers (with authenticity and convenience) and luxury brands (with additional sales opportunities). This study investigates the value of Blockchain-enabled resale to brands and consumers.

115-0554 Supplier Encroachment through Online Marketplaces

Hongseok Jang, Assistant Professor, Tulane University, United States
Quan Zheng, Associate Professor, University of Science and Technology of China, China
Xiajun Pan, Associate Professor, University of Florida, United States

We study whether a supplier should encroach on an online retail marketplace where both reselling and agency channels are available and its impact on stakeholders in e-commerce. We show that agency encroachment could lead to different results and managerial insights, comparing with traditional supplier encroachment through a direct channel.

115-0918 Add-On Pricing Under Valuation Uncertainty

Quan Zheng, Associate Professor, University of Science and Technology of China, China
Hongseok Jang, Assistant Professor, Tulane University, United States
Na Zhang, Student, University of Florida, United States
Xiajun Pan, Associate Professor, University of Florida, United States

We incorporate a hitherto neglected feature: the purchase time of the base good is separated with the consumption time of the add-on, leading to valuation uncertainty. Consumers can either purchase the add-on at a discount with valuation uncertainty or wait until the uncertainty is resolved but at a higher price.

115-1022 Luxury Brands' Fight against Counterfeits - Public or Dark?

Lai Wei, Assistant Professor, Boston College, United States
Larisa Kovalenko, Assistant Professor, Boston College, United States

Luxury products can face both deceptive and non-deceptive counterfeits at the same time. We characterize the optimal anti-counterfeit policies in generating higher revenues and policies that effectively decrease the volume of counterfeits sales, in a market consisting of two groups of customers, naive and sophisticated customers.

Invited Session

256	Tuesday, 02:15 PM - 03:45 PM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Advances in Revenue Management and Assortment Optimization	
	Chair(s): Huanan Zhang Chengyi Lyu	

115-0208 Fair Assortment Planning

Qinyi Chen, Student, Massachusetts Institute of Technology, United States
Negin Golrezaei, Professor, MIT Sloan School of Management, United States
Fransisca Susan, Student, Massachusetts Institute of Technology, United States

We study a fair assortment planning problem, where items with similar merits are offered similar visibility. We propose an Ellipsoid-based framework to find near-optimal solutions to this problem, resulting in a polynomial-time 1/2-approx. algorithm and a PTAS. Our case study on the MovieLens dataset demonstrates the efficacy of our algorithms.

115-0544 Dynamic Pricing and Learning with Discounting

Zhichao Feng, Assistant Professor, Hong Kong Polytechnic Univ, Hong Kong, China
Milind Dawande, Professor, University of Texas Dallas, United States
Ganesh Janakiraman, Professor, University of Texas Dallas, United States
Anyan Qi, Assistant Professor, University of Texas Dallas, United States

In practical settings, learning algorithms can take a substantial amount of time to converge, thereby raising the need to understand the role of discounting in learning. We illustrate the impact of discounting on the performance of learning algorithms by examining two representative dynamic pricing and learning problems.

115-1066 Coordinated Inventory Stocking and Assortment Personalization

Omar El Housni, Assistant Professor, Cornell University, United States
Huseyin Topaloglu, Professor, Cornell University, United States
Paat Rusmevichientong, Professor, University of Southern California, United States
Yicheng Bai, Student, Cornell University, United States

We give approximation algorithms for a joint inventory allocation and assortment personalization problem motivated by an online retail setting, where we have a limited amount of storage capacity that needs to be allocated among multiple products to serve different customers that arrive over a selling horizon.

115-1598 Assortment optimization under the multiple discrete choice model

Heng Zhang, Assistant Professor, Arizona State University, United States
Hossein Piri, Assistant Professor, University of Calgary, Canada
Woonghee Huh, Professor, Sauder School of Business, UBC, Canada
Hongmin Li, Professor, Arizona State University Tempe, United States

We consider an assortment optimization problem under the Multiple-Discrete-Choice (MDC) model, which captures the multi-option-multi-unit purchase behavior. We discuss an algorithm framework facilitates the design of FPTAS for the problem under a range of practical constraints and how to apply such models with real data for practical decision making.

Invited Session

257	Tuesday, 02:15 PM - 03:45 PM, Regency Ballroom O	Track: Empirical Research in Operations Management
	Invited Session: Empirical Advances of Blockchain Applications in SCM (I)	
	Chair(s): Stephan Wagner Maximilian Klöckner	

115-0116 Exploring the Digital-Physical Interface in Blockchain Applications: Insights from the Luxury Goods Industry

Maximilian Klöckner, Post Doc/Researcher, ETH Zurich, Switzerland
Alexander Fink, Innovation Manager, ETH Zurich, Germany
Leonie Flückiger, Consultant, McKinsey & Company, Switzerland
Christoph Schmidt, Post Doc/Researcher, Eth Zurich, Switzerland
Stephan Wagner, Professor, ETH Zurich, Switzerland

In this study, we explore one of the key challenges of blockchain adoption in supply chains: The digital-physical interface. Leveraging a multiple case study approach, we investigate how firms in the Swiss luxury watch industry address and safeguard the connection between the physical watches and the digital blockchain record.

115-0178 Influences of Organizational Blockchain Network Periphery and Institutional Pressures on Supply Chain Collaboration

Kiran Patil, Student, University of North Texas, United States

Using institutional theory, this study suggests that peripheral organizations in the blockchain-based network will yield to institutional pressures and that blockchain's core tenets will inspire them to assume significant roles in supply chain collaboration efforts to gain legitimacy. The findings help practitioners emphasize blockchain's importance in inter-organizational planning for startups.

115-0513 Understanding Blockchain Technology Performance in Supply Chain Management with Computer Simulations and Experiment

Yu Xia, Professor, College of William and Mary, United States

We introduce three research projects that simulate blockchains in supply chain operations. The three projects represent a large and complicated supply chain, a NGO supply chain, and a vaccine-distribution supply chain respectively. The performances of blockchain technologies in supply chain management are then discussed and evaluated in various dimensions.

115-0862 A configurational view of the socio-technical environment of Industry 4.0 adopters

Érico Marcon, Student, Organizational Engineering Group, Brazil
Giuliano Marodin, Associate Professor, University of South Carolina, United States
Alejandro Frank, Associate Professor, Universidade Federal Do Rio Grande Do Sul, Brazil

Tuesday, 02:15 PM - 03:45 PM

Organizational decisions for Industry 4.0 implementation demand a configurational perspective. We analyze how socio-technical configurations host better environments for Industry 4.0 and performance. Results show that companies should focus initially on organizational aspects, followed by worker improvements to reach a digital master level along with productivity, flexibility, and quality improvements.

Invited Session

258	Tuesday, 02:15 PM - 03:45 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Novel Technologies for Platforms and Service/Recommender Systems	
	Chair(s): Tongxin Zhou	

115-0433 Impact of Self-Service Technology in Designing a Service Delivery System

JIE WANG, Student, The University of Hong Kong, Hong Kong, China

Lijun Ma, Professor, Shenzhen University, China

Weili Xue, Professor, Southeast University, China

Yong-Hong Kuo, Assistant Professor, The University of Hong Kong, Hong Kong, China

A typical service delivery system usually involves sales agents and/or self-service technologies to serve consumers by a coproduction process. We establish a principal-agent model to study the value of self-service technologies in designing a service delivery system wherein the sales agent's service cost is private information.

115-1859 Learning with Two-Sided Structured Data

Wanning Chen, Assistant Professor, University of Washington, United States

In this talk, we introduce new learning techniques developed for data with two-sided structure in recommender systems, panel data and e-commerce platforms. We show how to address new challenges brought by such a special structure and how to build structure-aware machine learning methods in this setting.

115-1992 Value of Information for Trade Finance

Jiding Zhang, Assistant Professor, New York University, China

S. Alex Yang, Associate Professor, London Business School, United Kingdom

Xiangfeng Chen, Professor, Fudan University, China

We study the value of information on trade finance platforms. Utilizing a dataset that records firms' financing behavior, we empirically investigate how firms decide whether to keep, cash, or transfer bills. We study how such behavior changes with firms' knowledge of financing needs of their upstream partners.

Contributed Session

259	Tuesday, 02:15 PM - 03:45 PM, Silver Spring 1	Track: Data Science and Analytics
	Contributed Session: Data Analytics Methods	
	Chair(s): Zezhen (Dawn) He	

115-0620 A Double Judgment Approach Method for Evaluating the Efficiency of DMUs

Reza Gharoei Ahangar, Assistant Professor, Lewis College of Business, United States

This study introduces a novel method for determining the weights of input and output variables in the efficiency of decision-making units. We propose a double judgment approach, which reduces the number of variables needed to evaluate the efficiency of units so that data envelopment analysis can be more meaningfully employed.

115-1376 Learning Mixed Multinomial Logits with Provable Guarantees and its Applications in Multi-product Pricing

Yiqun Hu, research scientist, Amazon.com, United States

David Simchi-Levi, Professor, Massachusetts Institute of Technology, United States

Zhenzhen Yan, Assistant Professor, Nanyang Technological University, Singapore

We propose a new algorithm that learns both mixture weights and component-specific logit parameters in a mixed MNL model, which has provable convergence guarantees for an arbitrary number of mixtures. We further provide a sample complexity analysis to show that only a polynomial number of samples is required.

115-2041 Bringing Data Into Dynamic Models: Guidelines For Advanced Estimation Methods

Jose Lopez, Student, MIT Sloan School of Management, United States

Hazhir Rahmandad, Associate Professor, Sloan School of Management, United States

Dynamic, non-linear models require customized methods for formal estimation. Increasing data availability and computational power provide opportunities, though many audiences remain unfamiliar. Synthesizing across literatures, we develop a pragmatic workflow to guide decision making and identify promising approaches for addressing recurring problems. Additionally, we provide detailed examples through different models.

115-2154 Big-data Driven Flood Disaster Risk Management

Huimin Wang, Professor, Hohai university, China

Jing Huang, Professor, Hohai University, China

Gaofeng Liu, Professor, Hohai University, China

Lu Wang, Professor, Hohai university, China

Tuesday, 02:15 PM - 03:45 PM

Flood disasters pose a significant risk to communities and economies worldwide. Big data analytics can provide real-time information for flood disaster risk management. Our project utilizes big data and artificial intelligence technologies to develop an intelligent perception technology, a data-driven and model-driven flood risk assessment model, and a decision-making platform.

Invited Session

260	Tuesday, 02:15 PM - 03:45 PM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Emerging Topics in Logistics	
	Chair(s): Suman Nirnanjan	

115-0123 Blockchain-based Air Cargo Delay Prediction using Federated Learning

Rosalin Sahoo, Student, Penn State University University Park, United States

To address the security threats in air cargo sector, outline the features of blockchain and federated learning, emphasizing its application in air cargo delay prediction. The findings of our research show that the FL outperforms the centralized learning for delay prediction.

115-0734 Does Gender Diversity in Corporate Organizations Lead to Responsible ESG Decisions?

Arunachalam Narayanan, Associate Professor, University of North Texas, United States

Suman Nirnanjan, Assistant Professor, University of North Texas, United States

Anto Verghese, Assistant Professor, University of North Texas, United States

Smriti Srivastava, Student, University of North Texas, United States

Pranay Prateek, Student, University of North Texas, United States

We focus on answering the research question if gender diversity (female representation) increases the company's involvement in environmental social governance (ESG) decisions. We explore the mediating role ESG plays in gender diversity impacting firm and supply chain performance. Specifically, we use data from retail and manufacturing sectors.

115-1555 The role of Additive Manufacturing in fulfilling demands of Aerospace spare parts industry

Himali Patil, Student, University of North Texas, United States

Suman Nirnanjan, Assistant Professor, University of North Texas, United States

Arunachalam Narayanan, Associate Professor, University of North Texas, United States

Gopalakrishnan Narayanamurthy, Associate Professor, University of Liverpool, United Kingdom

Managing an efficient supply chain of aerospace spare parts is complex and expensive due to uncertainty in demand and high cost associated with required spare parts inventory levels. In this study, we investigate how Additive Manufacturing can benefit the operation of managing spare parts in aerospace industry using case study.

115-1652 Social Sustainability Amidst Controversies: Influence of Focal Firm on Supplier's Social Sustainability Performance

Ellie Falcone, Assistant Professor, Oklahoma State University, United States

Satabdi Hazarika, Student, University of Arkansas - Fayetteville, United States

Brian Fugate, Associate Professor, University of Arkansas - Fayetteville, United States

This study analyzes MSCI (KLD) data, which collects CSR-related information from various publicly available sources, to investigate the buyer-supplier environmental fit and social sustainability fit. It also examines the role of buyer-supplier relationship length in it.

115-2006 Static vs. Dynamic Trucking in Inventory Management with Environmental Considerations

Dincer Konur, Assistant Professor, Texas State University, United States

Gonca Yildirim, Assistant Professor, Gazi University, Turkey

We study a bi-objective stochastic inventory control system with cost and carbon emission minimization objectives. Two common policies are considered with explicit trucking decisions: continuous review (Q,R) policy with static trucking and period review (S,T) policy with dynamic trucking. These policies are compared for economic and environmental performance.

Invited Session

261	Tuesday, 02:15 PM - 03:45 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Data Driven Operations Management	
	Chair(s): Simin Li Nil Karacaoglu	

115-1336 Impact of Sequential Diagnostic Decisions on Product Returns: Evidence from a Bike-Sharing Firm

Hailong Cui, Assistant Professor, University of Minnesota, United States

Jingxuan Geng, Student, Temple University, United States

Guangwen Kong, Associate Professor, Temple University, United States

Guo Li, Professor, Beijing Institute of Technology, China

Sampath Rajagopalan, Professor, University of Southern California, United States

We study a diagnostic decision for a bike maintenance in which an inspector and a worker sequentially decide whether to replace or repair a part of a bike. We explore how such decisions are affected by workers' or inspectors' skill level and incentives, which lead to over-treatment or under-treatment.

115-1338 Predicting No-shows with Physician Preference

Yangzi Jiang, Student, Northwestern University Kellogg School o, United States

Tuesday, 02:15 PM - 03:45 PM

Patients needing primary care sometimes don't show up for their appointment slot due to the prolonged waiting time. Working with the primary physicians from Northwestern Memorial hospital, we aim to predict the no-show patterns of patients based on their demographics, history, and their primary care physician's scheduling preference.

Contributed Session

262	Tuesday, 02:15 PM - 03:45 PM, Winter Park 50	Track: Socially Responsible Operations
	Contributed Session: Emerging Issues in Socially Responsible Operations: Governments, NGOs and Businesses	
	Chair(s): Willem Haanstra	

115-0103 Do Consumers Perceive Corporate Social Responsibility Differently When Purchasing Services vs. Goods?

HANNAN SADJADY NAEENI, Assistant Professor, University of South Carolina Aiken, United States

Hua (Meg) Meng, Associate Professor, Longwood University, United States

Literature suggests that low corporate social responsibility (CSR) negatively impacts the relationship between firms and consumers. Our results suggest that consumers react more negatively towards low CSR when the firm is a service provider rather than a good producer. We provide an underlying cognitive mechanism to explain why.

115-0359 Donating on the block: Exploring potentials and barriers to accepting cryptocurrencies in NPOs

Lars Friedrich, Student, Friedrich-Alexander Universitat Erlangen-Nurnberg, Germany

Michael Mertel, Student, Friedrich-Alexander Universitat Erlangen-Nurnberg, Germany

Katharina Hübner, Student, Friedrich-Alexander Universitat Erlangen-Nurnberg, Germany

Kai-Ingo Voigt, Professor, Friedrich-Alexander Universitat Erlangen-Nurnberg, Germany

Previous studies suggest that cryptocurrencies can increase willingness to donate. Our study aims to identify opportunities and barriers to implementing a blockchain-based donation process for NPOs. By interviewing 42 NPOs, we find opportunities in building trust, improving processes and targeting new donors. Barriers include market volatility and loss of data.

115-1165 Participatory Societal Business Case development for Automated Train Operations

Willem Haanstra, Assistant Professor, University of Twente, Netherlands

Jan Braaksma, Associate Professor, University of Twente, Netherlands

The implementation of Automated Train Operations is changing how railways are operated and managed in Europe. We outline a Participatory Design Science Research project on the development of a Societal Business Case framework for implementing ATO. This approach aims to assess societal impacts associated with implementing ATO in the Netherlands.

115-1956 Understanding Public Private Partnerships Structure decisions in E-Governance Projects

Sanjog Ray, Associate Professor, IIM Indore, India

Public private partnerships (PPP) have been the preferred mode for executing e-Governance projects as government lacks technology expertise. One of the key challenges is deciding on the appropriate PPP model. This study based on e-Governance PPP projects in India attempts to understand how PPP models are selected and structured.

Invited Session

265

Tuesday, 04:00 PM - 05:30 PM, Celebration 1

Track: Agriculture and Food Supply Chains

Invited Session: **Agricultural Innovations and Operations**

Chair(s): Fasheng Xu Haoran Yu

115-0844 First-mile Cooling Storage at Farm-gate Market: Quality and Pricing Competition

Zheyu Jiang, Student, University of Miami, United States

Xin Geng, Assistant Professor, University of Miami, United States

Nan Yang, Professor, University of Miami, United States

Agricultural supply chains at emerging markets face serious food loss because of small farmers' limited access to efficient cooling storage. Motivated by innovative business models, we study whether and how recent affordable and flexible cooling solutions can improve farmers' profits, by considering pricing and quality competition among farmers.

115-1319 Retailing Strategies of Imperfect Produce and the Battle Against Food Waste

Haoran Yu, Student, Syracuse University, United States

Burak Kazaz, Professor, Whitman School of Management, United States

Fasheng Xu, Assistant Professor, Syracuse University, United States

This study investigates how retailers should choose from three popular retailing strategies (discarding, bunching, and differentiating) to deal with the imperfect produce, and examines how retailers make ordering and pricing decisions. Our result shows that each strategy could be optimal under different conditions.

115-1643 Competitive Technology Adoption for Supply Transparency in Fresh Produce Retailing

N. Bora Keskin, Associate Professor, Duke University Durham, United States

Chenghuai Li, Student, Duke University, United States

Jeannette Song, Professor, Duke University, United States

Motivated by the adoption of technologies (e.g., Internet of Things and Blockchain) in fresh produce retailing, we consider a game theoretical model where competing retailers can adopt the technologies for better supply transparency. We characterize the impact of competition and merger on technological adoption, profit, food waste, and consumer surplus.

115-1709 Selling Agri-Tech Products: Firm Strategy, Farmer Incentives, and Government Subsidy

Xiao Tan, Student, Washington University in St. Louis, United States

Duo Shi, Assistant Professor, The Chinese Univ of Hong Kong, Shenzhen, China

Fuqiang Zhang, Professor, Washington University St Louis, United States

With the development of technology, there are many emerging agri-technology products that can help with improving output. We study the impact of agri-tech product adoption, like agricultural drones, on traditional agriculture supply chain. Farmers' purchasing strategies, the firm's pricing decisions, and government subsidy schemes are considered.

115-1905 Matching Platforms for Smallholder Supply Chains

Sergio Camelo Gomez, Student, Stanford University, United States

Joann de Zegher, Assistant Professor, MIT, United States

Dan Iancu, Associate Professor, Stanford University, United States

We design a platform that connects smallholder farmers with intermediaries that transport their fruit, and determines routes and payments to ensure compliance. We use a distributionally robust approach based on the Wasserstein metric to model commitment uncertainty, and through historical GPS data we measure the platform's potential for welfare improvement.

Invited Session

266

Tuesday, 04:00 PM - 05:30 PM, Celebration 2

Track: Behavioral Operations Management

Invited Session: **Performance in Behavioral Operations Management**

Chair(s): Gawon Yun

115-0271 How Tariff and Non-Tariff Barriers Affect Supply Chain Members' Decision

Shania Perdana, Student, National Sun Yat-Sen University, Taiwan

Chieh Lee, Associate Professor, National Sun Yat-Sen University, Taiwan

The government-imposed tariff or non-tariff barriers affect the manufacturer, making the manufacturer must plan a strategy to deal with these barriers. On the other side, the government aims for the better social welfare of supply chain members. This study explores which response works best for the manufacturer and the government.

115-1044 Discretion in Automated Supermarket Replenishment: Censorship Bias and Self-inflicted Stockouts

Bengu Ozdemir, Student, IE BUSINESS SCHOOL, Spain

Antti Tenhiala, Assistant Professor, IE BUSINESS SCHOOL, Spain

We study censorship bias to explain a paradox where retailers order less than algorithmic recommendations after a stockout. Accounting for endogeneity, we find that deviations that are susceptible to censorship bias lead to self-inflicted stockouts. With additional data analysis, we show that by blocking such deviations, retailers can reduce stockouts.

Tuesday, 04:00 PM - 05:30 PM

115-1198 The Hidden Cost of Hidden Fees - Price Obfuscation in Online Platforms

Jose Lopez, Student, MIT Sloan School of Management, United States

Edward Anderson, Professor, University of Texas Austin, United States

Many popular consumer-facing platforms offer to reduce search costs and efficiently find lowest prices. However, their incentives may not directly align with consumers'. We study the effects of price obfuscation on performance, and augment current models to incorporate consumer behavioral learning, multiple sources of competitive pressure, trust, and reputation building.

115-1517 The Curvilinear Effect of Digital Interactions and Diversity on Project Team Performance

Vijaya Sunder M, Assistant Professor, Indian School of Business, India

Siddhartha Modukuri, Post Doc/Researcher, Indian School of Business, India

Digitally interactive platforms enabled ease of forming geographically and culturally diverse project teams and infinite interaction possibilities among project team members. However, our empirical results indicate curvilinear relationships between the level of diversity and digital interaction intensity on project team learning behaviors and project performance to advance project management literature

Contributed Session

267	Tuesday, 04:00 PM - 05:30 PM, Celebration 3	Track: Healthcare Operations Management
	Contributed Session: Optimization Models for Healthcare	
	Chair(s): Narges Mohammadi	

115-0809 Disease Bundling or Specimen Bundling? Cost- and Capacity-Efficient Strategies for Multi-disease Testing with Genetic Assays

Douglas Bish, Professor, University of Alabama, United States

Ebru Bish, Professor, University of Alabama, United States

Hussein El Hajj, Assistant Professor, Santa Clara University, United States

We develop the Pareto frontier for cost- and capacity-efficient testing designs for infectious disease screening, considering multiplexing (disease bundling), where one assay detects multiple diseases using one specimen; and pooling (specimen bundling), where specimens from multiple subjects are tested with one assay. We develop structural properties and managerial insight.

115-1361 Design of Patient Visit Itineraries in Tandem Systems

Nan Liu, Associate Professor, Boston College, United States

Guohua Wan, Professor, Shanghai Jiao Tong University, China

Shan Wang, Assistant Professor, Sun Yat-sen University, China

We develop the first optimization modeling framework to provide each patient an individualized visit itinerary in a tandem service system. We show that, a well-designed patient visit itinerary which carefully addresses the interdependence among stages can significantly improve patient experience and provider utilization.

115-1722 Efficient Discovery of Cost-effective Policies in Sequential, Medical Decision Making Problems

Narges Mohammadi, Student, Imperial College London, United Kingdom

Reza Skandari, Assistant Professor, Imperial College London, United Kingdom

Anand Shah, Senior Lecturer, Imperial College London, United Kingdom

Cost-effectiveness analysis is used by policymakers to prioritize healthcare interventions. We develop an efficient algorithm that discovers the cost-effectiveness frontier and policies for sequential stochastic optimization problems and use it to devise easy-to-implement hearing loss screening strategies for patients with cystic fibrosis. We prove theoretical properties of the solution methods.

115-1731 Inverse Learning: A Data-driven Inverse Optimization Framework for Learning Optimal Solutions

Farzin Ahmadi, Student, Civil and Systems Engineering, United States

Fardin Ganjkanloo, Student, Johns Hopkins University, United States

Kimia Ghobadi, Assistant Professor, Johns Hopkins University, United States

Long-term diet adherence is key to realizing dietary goals. We introduce Inverse-Learning, a new framework to tackle the patient adherence problem, and provide a decision-support tool to enable gradual progression toward dietary goals. The framework balances patient preferences and expert-driven nutritional constraints and offers a range of options to decision-makers.

Invited Session

268	Tuesday, 04:00 PM - 05:30 PM, Celebration 4	Track: Healthcare Operations Management
	Invited Session: Deceased-Donor Organ Procurement and Utilization Optimization	
	Chair(s): Diwakar Gupta	

115-0032 Split Liver Transplantation: An Analytical Decision Support Model

Yanhan (Savannah) Tang Tang, Student, Carnegie Mellon University, United States

Alan Scheller-Wolf, Professor, Carnegie Mellon University, United States

Sridhar Tayur, Professor, Carnegie Mellon University, United States

Emily Perito, Associate Professor, University of California, San Francisco, United States

John Roberts, Professor, University of California, San Francisco, United States

Tuesday, 04:00 PM - 05:30 PM

Split liver transplantation (SLT) can potentially save two lives using one liver. To facilitate increased SLT usage, we formulate a multi-queue fluid model, incorporating size matching specifics, dynamic health conditions, transplant type, and fairness. We find the optimal organ allocation policy, and evaluate its performance versus other common allocations.

115-0355 Optimal Quality Oversight in Kidney Transplantation and Its Impact on Transplant Centers' Waitlist Management

Zahra Gharibi, Assistant Professor, California State University San Marcos, United States

Hung Do, Associate Professor, University of Vermont, United States

Michael Hahsler, Assistant Professor, Southern Methodist University, United States

Mehmet Ayyaci, Associate Professor, University of Texas Dallas, United States

Report card programs collect and publicize information on patient outcomes as a means of improving quality. However, it is unclear whether behavioral responses to such programs improve patient outcomes. We study the report cards as an incentive mechanism to induce socially-optimal medical decisions in the context of kidney transplantation.

115-0552 A Smarter Approach For Strategic Kidney Placement

Diwakar Gupta, Professor, University of Texas Austin, United States

Paola Martin, Assistant Professor, Indiana University Bloomington, United States

Jingyao Huang, Assistant Professor, University of Missouri At Kansas City, United States

Each deceased-donor kidney accept-or-decline decision is believed to result from a comparison of anticipated consequences of transplant versus staying on dialysis. We present evidence that some centers exercise "batch turn-downs" and "strategic placement". We investigate the impact of strategic decisions and evaluate strategies that could simultaneously improve fairness and efficiency.

115-0697 Improving family authorizations for organ donation via budget-neutral contracts

Diwakar Gupta, Professor, University of Texas Austin, United States

Paola Martin, Assistant Professor, Indiana University Bloomington, United States

Successful recovery of deceased-donor organs significantly depends on the referrals being timely. We propose and analyze a budget-neutral incentive scheme aimed at increasing the proportion of timely referrals. A calibrated numerical study with one OPO's data shows that annually up to 13.9 more donors may exist without requiring external funds.

Invited Session

269	Tuesday, 04:00 PM - 05:30 PM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Advances in Empirical Healthcare Operations	
	Chair(s): Guang Cheng	

115-0747 The Spillover Effect of Suspending Non-essential Surgery: Evidence from Kidney Transplant

Guihua Wang, Assistant Professor, University of Texas Dallas, United States

Minmin Zhang, Student, University of Texas at Dallas, United States

Tinglong Dai, Professor, Johns Hopkins University, United States

This study estimates the potential spillover effect of suspending non-essential surgery on patient access to essential health services. Using deceased-donor kidney transplantation as the clinical setting and a difference-in-differences approach, we find that a state-level suspension of non-essential surgery led to a 23.6% reduction in the transplant volume.

115-1205 The impact of increasing entry fee on emergency department demand: A territory-wide study

Hyun Seok (Huck) Lee, Associate Professor, KUBS(Korea University Business School), South Korea

Eric Park, Assistant Professor, The University of Hong Kong, Hong Kong, China

Timothy Rainer, Professor, The University of Hong Kong, Hong Kong, China

Using all patients' emergency department (ED) visit information in Hong Kong during 2014-2019, we empirically study the impact of an ED entry fee increase from HK\$100 to HK\$180 in June 2017 on ED patient visit behavior in the universal public health system of Hong Kong SAR.

115-1815 Impacts of Priority in Deceased-Donor Kidney Allocation: A Regression Discontinuity Analysis

Jiayi Liu, Assistant Professor, Virginia Tech, United States

Diwas KC, Professor, Emory University, United States

The severe shortage of deceased-donor kidneys has turned the allocation into a rationing problem. Leveraging a national kidney allocation policy that assigns priority based on a sharp cutoff, this study examines how patients are affected by, and respond to, the kidney allocation priority.

115-1920 Emergency Department Experiment in Displaying an Algorithmic Wait Time Prediction

Danqi Luo, Assistant Professor, UC San Diego, United States

Mohsen Bayati, Associate Professor, Stanford University, United States

Erica Plambeck, Professor, Stanford University, United States

Two approaches are field-tested for displaying an algorithmic prediction of low-acuity patients' wait time to see a physician in an emergency department. The first is the algorithmic prediction rounded to a multiple of 10 minutes, and the second is an interval designed to community uncertainty.

Tuesday, 04:00 PM - 05:30 PM

Contributed Session

272

Tuesday, 04:00 PM - 05:30 PM, Celebration 8

Track: Operational Excellence

Contributed Session: Operational Excellence in Transport and logistics

Chair(s): Li Ding

115-1106 A stitch in time saves nine? Effect of food delivery delays on customer re-ordering behavior

Maya Ganesh, Assistant Professor, Indian Institute of Management Ahmedabad, India

Debjit Roy, Professor, Indian Institute of Management Ahmedabad, India

Cloud-kitchen model has seen a steep increase in the last few years. We use order level data from two cities to construct an empirical model that helps understand the effect of food delivery delays on customer feedback and reordering behavior.

115-1412 Feasibility study of Digital Twin application for driving process improvement in an Insurance Firm

Maneesh Kumar, Professor, Cardiff University, United Kingdom

Mohit Shukla, Student, Cardiff University, United Kingdom

Amogh Chaube, Student, Cardiff University, United Kingdom

The research explores the feasibility of developing a digital twin model for improving an insurance firm's customer loan application process. Using process mapping, waste/bottleneck activities were identified and thereafter optimised using statistical and machine learning models such as Logistics regression, Decision tree, Random forest, resulting in process improvement by 42%.

Contributed Session

273

Tuesday, 04:00 PM - 05:30 PM, Celebration 9

Track: Supply Chain Management

Contributed Session: Sustainable OM

Chair(s): Di Li

115-0382 Traversing between the arcs of sustainability collaboration: Implications for dyadic environmental performance

Antony Paulraj, Professor, NEOMA Business School, France

Constantin Blome, Professor, Lancaster University, Germany

Sichu Xiong, Student, University of Nottingham Ningbo Campus, China

Drawing on the 'arcs of integration' framework, this paper delves into different external collaboration strategies within the sustainability context and studies the effect of arcs of sustainability collaboration on dyadic environmental performance. This study contributes to extending the original 'arcs of integration' framework to the supply chain sustainability context.

115-1217 Investigation of Carbon emissions of Distribution Network - A Sustainability Perspective

Kottala Sri Yogi, Assistant Professor, Symbiosis Institute of Business Management, Hyderabad, India

Atul Kumar Sahu, Assistant Professor, Guru Ghasidas Vishwavidyalaya (A Central University), India

Mani Venkatesh, Associate Professor, Montpellier Business School, France

Research on sustainable supply chain management (SSCM) in Indian context is emerging. Increasingly, the problem of climate change is being accepted as a major challenge by policy makers around the world (Datta 2010). The main objective of the paper is to analyze the application of sustainable measures in distribution network.

115-1588 An integrated policy framework for sustainable supply chain management in Manufacturing Sector

Kottala Sri Yogi, Assistant Professor, Symbiosis International Deemed University, Pune, India, India

Mani Venkatesh, Associate Professor, Montpellier Business School, France

Main objective of this paper is to develop an integrated policy framework for sustainable supply chain management practices in manufacturing sector using Interpretive Structural Modelling and Best worst Method.

115-1674 Sustainable Supply Chain Management: An Empirical Study of the Chinese Foundry Industry

John Bancroft, Senior Lecturer, Oxford Brookes University, United Kingdom

Di Li, Senior Lecturer, University of Warwick, United Kingdom

Karan Vishwanath, Student, City University - London, United Kingdom

With rising pollution and the depletion of natural resources, sustainability within supply chain management continues to be a topic of paramount importance. This study explores the relationship between stakeholders, practices and performance of sustainable supply chain management in the Chinese foundry industry using survey data from foundry employees.

Invited Session

274

Tuesday, 04:00 PM - 05:30 PM, Celebration 10

Track: Supply Chain Management

Invited Session: Recent Topics in Platform Economy

Chair(s): Joel Goh Eryn Juan He

115-0850 Virtual Stockpile Pooling with Dynamic Deployment for Emergency Supplies

Minxuan He, Post Doc/Researcher, University of Chinese Academy of Sciences, China

Tuesday, 04:00 PM - 05:30 PM

Fang Liu, Associate Professor, University of Chinese Academy of Sciences, China

Jing-Sheng Song, Professor, Duke University Durham, United States

We consider an infinite horizon emergency supply stockpiling problem with uncertain emergency demand and regular demand. We investigate a static stockpile-deployment model as a benchmark and a virtual stockpile pooling with dynamic deployment with three stages in each period. We characterize the optimal policy and conduct an extensive numerical study.

115-0864 Big Tech Regulation and Tech Entrepreneurship: Evidence from China

Ke Rong, Professor, Tsinghua University, China

D. Daniel Sokol, Professor, University of Southern California, United States

Di Zhou, Assistant Professor, Tongji University, China

Feng Zhu, Professor, Harvard Business School, United States

We evaluate the impact of China's "Anti-Monopoly Guidelines for Platform Economy" on tech entrepreneurship. We find that after the launch of this guideline, markets where tech giants had significant presence experienced declines in both entry and venture capital investments. The result suggests a chilling effect on entrepreneurship from tech regulation.

115-1906 Disintermediation Governance and Complementor Innovation

Xia Han, Assistant Professor, Suzhou University, China

Gaoyang Cai, Student, Northwestern University, United States

Grace Gu, Assistant Professor, University of Southern California, United States

This study investigates how the governance policy of disintermediation affects complementors' innovation behavior in two-sided marketplaces. Leveraging a policy change to prevent disintermediation on Amazon.com, we find that the affected sellers significantly switched their innovation efforts to off-site channels as a result of the platform governance strategy.

115-1914 Information Design for Revenue-Based Financing

Eryn Juan He, Assistant Professor, University of Utah, United States

Joel Goh, Associate Professor, NUS Business School, Singapore

VC funding has grown massively recently. However, less than 1% of the new companies ever raise VC funding. Revenue-based financing has emerged as an alternative, which is repaid based on a percentage of future revenues. We aim to develop insights into the value of RB financing, compared with traditional modes.

Invited Session

275	Tuesday, 04:00 PM - 05:30 PM, Celebration 11	Track: Manufacturing Operations
	Invited Session: New Technology and New Methods in Operations	
	Chair(s): Yu Xia	

115-0331 Planning Specialists' Capacities: A Demand-Driven Approach

Hafez Shurrab, Assistant Professor, Penn State, United States

Amer Jazairy, Assistant Professor, Texas A&M University, United States

Aaron Glassburner, Assistant Professor, Air Force Institute of Technology, United States

In customer-order-driven, project-based operations (contrary to forecast-driven operations), planning and scheduling specialists' capacities (e.g., bid preparation, product customization) in response to demand fluctuations is becoming increasingly critical. Inspired by a demand-driven material requirement planning logic, we introduce a demand-driven capacity planning simulation model to accurately balance demand with specialists' capacities.

115-0484 Throughput Optimization in Manufacturing Plant : A Data-Driven Approach

Alok Raj, Assistant Professor, Xavier Labor Relations Institute, India

Mayukh Majumdar, Assistant Professor, Knauss School of Business, United States

SAROJ SINGH, Project head, Tata steel, India

In this paper, we address a throughput enhancement problem arising in the manufacturing industry using a data-driven approach. The objective is to learn about the entire system, identify the inefficiencies, find a feasible solution, and implement it in practice.

115-0960 Data Science-Based Monitoring of Slug-Flow Process in Continuous Chemical Manufacturing

Yanjun Qian, Assistant Professor, Virginia Commonwealth University, United States

In continuous chemical manufacturing, the slug-flow process plays a vital role in crystallization synthesis. In this work, we apply state-of-the-art data science methods to improve flow control for better crystallization quality using in-line imaging. Our framework will lead to scaling up the process without sacrificing slug uniformity.

115-1261 Solving the Westenberger-Kallrath problem with reinforcement learning

Philipp Willms, Student, University of Kassel, Germany

Marcus Brandenburg, Professor, Flensburg University of Applied Sciences, Germany

We study solution approaches based on reinforcement learning to solve the classical Westenberger-Kallrath problem. With the help of a discrete-event simulation model and custom heuristics, we train separate agents to (1) find appropriate batch sizes and (2) schedule the production operations with the objective to minimize makespan.

115-1356 How Blockchain Data Influences Supply Chain Decision Making

Tingting Chung, Associate Professor, College of William & Mary, United States

Tuesday, 04:00 PM - 05:30 PM

Yu Xia, Professor, College of William and Mary, United States
Nicola Ibba, Director, University of South Dakota, United States
James Davies, Student, College of William & Mary, United States

The impact of blockchain on supply chain decision making has been theorized in several different ways. We report an experimental study that directly compares supply chain decision making with vs. without blockchain data available to the decision maker, using ChainDecision, an online interactive game we designed and built.

Contributed Session

276	Tuesday, 04:00 PM - 05:30 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Best Paper Award of the College of Humanitarian Operations and Crisis Management	
	Chair(s): Mohammad Moshtari	

115-2130 Aiming for research and practice impact in humanitarian operations: a critical review, challenges, and opportunities

Maria Besiou, Professor, Kuehne Logistics University, Germany
Erica Gralla, Associate Professor, George Washington University, United States

Since the first papers on humanitarian operations, there has been discussion about the impact of our research on practice and on scholarship. This work reviews the literature and survey authors to see how we are doing so far, with an eye toward maintaining or redirecting the trajectory toward increasing impact.

115-2131 Market Systems in a Humanitarian Crisis - Making Food more Affordable and Available

Tristan Downing, Student, Massachusetts Institute of Technology, United States
Jarrod Goentzel, Senior Lecturer, MIT, United States
Maria Besiou, Professor, Kuehne Logistics University, Germany

Humanitarian organizations increasingly provide cash assistance but struggle to analyze market dynamics. Our system dynamics model combines population displacement with material and financial flows for market actors. Model application in Nigeria demonstrates the cost-effectiveness of market intervention and supports efforts to strengthen humanitarian development.

115-2132 To Earmark or to Non-Earmark? The Role of Control, Transparency and Warm-Glow.

Ozalp Ozer, Professor, University of Texas Dallas, United States
Gloria Urrea, Assistant Professor, University of Colorado Boulder, United States
Sebastian Villa, Assistant Professor, University of New Mexico, United States

Empirical evidence of how earmarking influences donors is scarce. Using three online experiments, we investigate how, when, and why earmarking affects three donors' decisions as well as three mechanisms potentially driving the earmarking effect (i.e., control, operational transparency, warm-glow). Our findings provide clear insights to design fundraising campaigns more effectively.

115-2133 Tweet in Unison? Examining Content Coordination and Social Media Engagement during Disasters.

Changseung (Chang) Yoo, Assistant Professor, McGill University, Canada
Eunae Yoo, Assistant Professor, Indiana University Bloomington, United States
Lu (Lucy) Yan, Associate Professor, Indiana University Bloomington, United States
Alfonso Pedraza, Professor, Indiana University, United States

Disaster relief organizations often post social media content via multiple accounts on the same platform. Accounts represent distinct entities (e.g., national headquarters, local branch). Using Twitter data collected in partnership with the Canadian Red Cross, we examine how these organizations should coordinate content creation across their accounts.

Contributed Session

277	Tuesday, 04:00 PM - 05:30 PM, Celebration 13	Track: Teaching/Pedagogy in POM
	Contributed Session: Student Engagement and Motivation	
	Chair(s): Elham Torabi	

115-0139 Teaching LogFrame for Project Monitoring and Evaluation

Tung Nguyen, Lecturer, International University - VNU HCMC, Vietnam

Teaching the logical framework (LogFrame) in a project management course broadens students' ability to manage project risks and design a comprehensive project monitoring and evaluation system. This paper illustrates how to use the risk register to develop the assumptions for the LogFrame in a community-based water supply project.

115-0426 SPARRING: Deliberate Practice in the POM Classroom

Francois Giraud-Carrier, Associate Professor, Weber State University, United States

More experiential learning is needed to better prepare students for the workplace. Using deliberate practice as the conceptual framework, we develop the SPARRING model, an instructional design model for experiential education, and discuss simple and easy techniques instructors can use to make their POM classes more experiential.

115-0547 Using Services Management Principals for Improving Student Engagement and Satisfaction

Elham Torabi, Assistant Professor, James Madison University, United States
Baback Vaziri, Assistant Professor, James Madison University, United States

Tuesday, 04:00 PM - 05:30 PM

Amy Connolly, Assistant Professor, James Madison University, United States

We introduce design concepts and systematic continuous teaching improvement approach inspired by service operations principals. We present implementation results of a five-year study including student course evaluations and assessment of learning data in both in-person and online modes of an undergraduate introductory operations management class.

115-1761 Best practices in training for Innovation and Idea Management Systems in Healthcare

Kaveh Houshmand Azad, Lecturer, California State University Northridge, United States

This presentation reviews development and implementation of training programs for Innovation and Idea Management Systems, with a primary focus on healthcare institutions. This data-driven approach plays a key role in enabling operational and clinical functions to address safety and affordability of care, using improvement ideas from staff and physicians.

Invited Session

278	Tuesday, 04:00 PM - 05:30 PM, Celebration 14	Track: Service Operations
	Invited Session: Platform Economics and Behaviors in Service	
	Chair(s): Tingliang Huang	

115-0901 Impact of Consumer Complaint Relevance on Product Recalls: An Empirical Investigation of the Automobile Industry

Weihan Jia, Student, Trinity College Dublin, Ireland

Yufei Huang, Associate Professor, Trinity College Dublin, Ireland

Xingjie Wei, Assistant Professor, Leeds University, United Kingdom

This paper uses text mining to analyze the similarity between the defects in car recalls and consumer complaints, then examine how such complaint relevance impacts the timing of recall decisions. We find that more relevant complaints lead to faster car recall decisions.

115-0915 Managing Service Systems with Overconfident Customers

Na Zhang, Student, University of Florida, United States

Anand Paul, Professor, University of Florida, United States

Xu Sun, Assistant Professor, University of Florida, United States

We study a service system where true service times are unknown, and customers tend to use a small random sample as highly representative of service times and thus underestimate the variability of service times. This paper provides important implications for the manager's pricing and queue-length-information provision policies in service operations.

115-1927 Behavior-Based Pricing in Two-Sided Platforms

Bozhuang Lei, Student, City University of Hong Kong, China

Xiaohan Zhang, Student, City University of Hong Kong, China

Yimin Yu, Associate Professor, City University of Hong Kong, Hong Kong, China

Behavior-based pricing (BBP), retail practice of price discrimination between past and new customers, is widely adopted by two-sided platforms. We formulate a duopoly two-period model with BBP to show that customer-side BBP can improve platforms' profits when the developer side is multi-homing, overturning the implication of traditional BBP on profitability.

Contributed Session

279	Tuesday, 04:00 PM - 05:30 PM, Celebration 15	Track: Information Systems and Operations Management
	Contributed Session: Frontiers in Information Systems	
	Chair(s): Varada Krishnaswamy	

115-0232 What data is worth sharing? Classifying industrial data sharing in the triple bottom line

Lars Friedrich, Student, Friedrich-Alexander Universitat Erlangen-Nurnberg, Germany

The literature review aims to answer the question: What kind of data do companies share with other companies? We classify the types of data companies share into the concept of the triple bottom line. The results infer how frequently companies share economic (57), environmental (24), or social data (18).

115-1533 Using Virtual Teams for Projects: The Impact of Varying Levels of Virtuality

Ade Arowolo, Student, Brock University, Canada

Ken Klassen, Professor, Brock University, Canada

Teju Herath, Professor, Brock University, Canada

We study the impact of virtuality (the proportion of work done virtually) on project team performance. Using the theoretical frameworks of Adaptive Structuration Theory and Transformational Leadership Theory, a survey was administered in various industries. Results demonstrate the moderating effects of virtuality on communication frequency, leadership effectiveness, and performance.

115-1762 Disaster Recovery in Information Systems - Barter or Balance

Varada Krishnaswamy, Student, Virginia Tech, United States

Christopher Zobel, Professor, Virginia Tech, United States

A presumption underlying information system disaster recovery is that it is not an enterprise function. As evidenced in practice, functional business needs are presented independently of disaster recovery requirements. By making disaster recovery an objective of a particular business function, we demonstrate how it can become an operational necessity.

Tuesday, 04:00 PM - 05:30 PM

- 115-1922 Data Gatekeeper: Consumer Opt-out On a Content Platform
Xuanqi Chen, Student, PolyU, China
Yulan Wang, Professor, Hong Kong Polytechnic Univ, Hong Kong, China
Gang Li, Professor, Xi'an Jiaotong University, China

Consumers provide data on content platforms (CP), but CPs may share data with the third part. Regulations require that consumers should be given the choice to deny data sharing. Our analytical model shows that the regulation may increase or decrease the advertising intensity, hurt consumers, benefit the CP.

Invited Session

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| 280 | Tuesday, 04:00 PM - 05:30 PM, Coral Spring 1 | Track: Emerging Topics in Operations Management |
| | Invited Session: Interface between information, technology, and emerging OM practices | |
| | Chair(s): Li Cheng | |

- 115-1237 The role of stakeholders in shaping supply chain ESG transparency
Li Cheng, Assistant Professor, Michigan State University, United States
Manmohan Sodhi, Professor, City University - London, United Kingdom
Veronica Villena, Associate Professor, Arizona State University, United States

While past literature has noted the crucial role of individual stakeholder groups in driving the firm's disclosure of specific issues, our study examines the diversity of various stakeholders groups located upstream and downstream and its impact on supply chain transparency across a broad range of ESG issues.

- 115-1260 Losing the Title: How Symbolic Statuses Affect Online Volunteer Performance
Vinit Tipnis, Student, Kelley School of Business, United States
Eunae Yoo, Assistant Professor, Indiana University Bloomington, United States
Fei Gao, Assistant Professor, Indiana University Bloomington, United States

Online volunteering platforms award symbolic statuses to their top volunteers based on performance. Through a quasi-experimental design, we study how the loss of such statuses can affect volunteer performance on these platforms. We provide recommendations for platforms to implement to improve volunteer performance.

- 115-1321 Environmental Disclosure in Supply Chains
Jie Lian, Student, University of South Carolina, United States
Sining Song, Assistant Professor, University of Tennessee Knoxville, United States
Natalie (Ximin) Huang, Assistant Professor, University of Minnesota, United States
Yan Dong, Professor, University of South Carolina, United States

This research studies the spillover effect of a firm in disclosing its environmental performance on its suppliers' decision to do the same. The firm's disclosure creates both a pressure to disclose and an opportunity to freeride. Using panel data and econometric analysis, we investigate the outcome of this tradeoff.

- 115-1468 Transportation Planning for E-commerce with Delivery Promise
Wenyi Kuang, Assistant Professor, Fairleigh Dickinson University, United States
Yanji Duan, Assistant Professor, University of North Florida, United States
Angela Jones, Assistant Professor, Howard University, United States

This research builds on problems faced by retailers with guaranteed delivery promises. Using big data from a leading e-commerce retailer and based on results from different machine learning models, we propose an analytical model that provides guidance to retailers to achieve cost-effective assignments for cargo delivery scheduling across different channels.

Contributed Session

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| 281 | Tuesday, 04:00 PM - 05:30 PM, Coral Spring 2 | Track: Global Supply Chain Management |
| | Contributed Session: Panel: Global Manufacturing Trends | |
| | Chair(s): Torsten Doering Matteo Kalchschmidt | |

- 115-2129 Panel: Global Manufacturing Trends
Torsten Doering, Assistant Professor, Minerva University, United States
Steven Carnovale, Associate Professor, Florida Atlantic University, United States

This session hosted by the Global Manufacturing Research Group (GMRG) will start with a brief overview of GMRG activities and its global survey which addresses practices related to operations, innovation, plant culture, leadership, and supply chain management allowing operations management researchers to explore numerous relationships across many countries.

Invited Session

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| 282 | Tuesday, 04:00 PM - 05:30 PM, Blue Spring 1 | Track: Supply Chain Risk Management |
| | Invited Session: Uncertainty and Resilience | |
| | Chair(s): Zahra Azadi | |

Tuesday, 04:00 PM - 05:30 PM

115-0259 A Business Model with Product Rental

Ki Ling Cheung, Associate Professor, Hong Kong University of Science and Technology, Hong Kong, China
Albert Ha, Professor, Hong Kong University of Science and Technology, China
Jianyue Wang, Student, Hong Kong University of Science and Technology, Hong Kong, China

We develop a theoretical model to study a channel with both retail and rental. A manufacturer selling a product may also rent out it through a third party. We study when and how the addition of the rental option may benefit the manufacturer, and the impacts on social welfare.

115-0843 Risk absorption by manufacturers: An uncertain scenario

Shradha Kapoor, Student, Durham University, United Kingdom

Even though the Pandemic is over, in the new normal, we might still have to assume a possibility for the come back of unanticipated failure particularly in developing nations. The purpose of this paper is to investigate the risks absorbed by manufacturers using case study methodology during supply disruptions.

115-1552 AI and the future of jobs - Online job automation risk modelling, forecasting and clustering

Pierre Bouquet, Student, Massachusetts Institute of Technology, Switzerland
Amin Kaboli, Lecturer, Swiss Federal Institute of Technology in Lausanne, Switzerland
Yossi Sheffi, Professor, Massachusetts Institute of Technology, United States

This presentation introduces an online deep learning and data mining-based framework to assess automation risk across tasks, jobs, and sectors. A five-year forecast and clustering model helps anticipate job evolution, offering valuable insights for stakeholders to guide education, up-skilling, re-skilling, and hiring strategies, as well as identifying high-risk sectors.

115-1582 The Effect of Policy Uncertainty on Supply Chain Structure and Performance

Jafar Namdar, Post Doc/Researcher, Massachusetts Institute of Technology, United States
Sachin Modi, Professor, Villanova University, United States
Jennifer Blackhurst, Professor, University of Iowa, United States

We examine how firms adjust their sourcing decisions following Economic Policy Uncertainty (EPU) variations and whether such adjustments have any significant performance implications. We show that firms only react to EPU affecting their suppliers but do not adjust their supply bases in response to the host country's EPU.

115-2073 Competitive Pricing of Substitute Products under Supply Disruption

Varun Gupta, Associate Professor, University of North Georgia, United States
Dmitry Ivanov, Associate Professor, Berlin School of Economics and Law, Germany
Tsan-Ming Choi, Professor, University of Liverpool, United Kingdom

We study pricing of competitive substitute products in the presence of a supply disruption. Retailers often use responsive pricing to mitigate supply issues and manage demand in the short-term. In this setting, we explore equilibrium prices and sourcing strategies.

Invited Session

283	Tuesday, 04:00 PM - 05:30 PM, Blue Spring 2	Track: Empirical Research in Operations Management
	Invited Session: Platform Operations	
	Chair(s): Yannis Stamatopoulos Nil Karacaoglu	

115-0964 Dynamic College Admissions

Ignacio Rios, Assistant Professor, Jindal School of Management, United States
Tomas Larroucau, Assistant Professor, Arizona State University, United States

We study the determinants of college retention, and we identify two main channels that explain switches and dropouts: (i) initial mismatches, and (ii) learning. We provide empirical evidence for these two channels, we estimate a structural model of students' dynamic behavior, and we test several counterfactuals.

115-1275 Market Thickness and Delivery Efficiency in Food Delivery Platforms

Wenchang Zhang, Assistant Professor, Kelley School of Business, United States

In food delivery platforms, market thickness entails the restaurant density in a geographic area (i.e., a regional market). We study the implications of restaurant density and performances in food delivery platforms. We show that higher market thickness leads to shorter order wait times; it also boosts restaurants' sales and revenues.

115-1749 Information Integration in Peer-to-peer Markets

Peng-Chu Chen, Assistant Professor, The University of Hong Kong, Hong Kong, China
Ran Tao, Student, The University of Hong Kong, Hong Kong, China

245 undergraduates who simulated funders gave ratings for 199 peer-to-peer funding requests, each depicted by a narrative (soft information) and a score (hard information). Results suggest that forming a rating requires an integration of information. The way in which narrative ambiguity, score types, and funder preferences affect ratings is nontrivial.

115-2016 When Platforms Go Public, Standards Drop

Guillaume Lapierre-Berger, Student, McGill University, Canada
Juan Camilo Serpa, Associate Professor, McGill University, Canada
Maxime Cohen, Professor, McGill University, Canada

Tuesday, 04:00 PM - 05:30 PM

We argue that when an online platform transitions from private to public ownership, it will drop its screening standards to increase its user base (and revenue prospects). This tactic, however, imposes a cost on the platform's users. We substantiate this hypothesis with a diff-in-diffs analysis on two peer-to-peer lending platforms.

115-2128 Cents of Urgency: How Opening a Co-located Urgent Care Center Affects Emergency Department Arrivals

Simin Li, Assistant Professor, Tulane University, United States
Achal Bassamboo, Professor, Northwestern University, United States
Martin Lariviere, Professor, Northwestern University, United States

We show that a colocated UCC helps alleviate ED overuse. We find the number of ED low-acuity encounters decreases by 20.9% post colocated UCC opening. We find that the impact of a UCC on ED is stronger when it is colocated than when it is non-colocated but nearby an ED.

Invited Session

284	Tuesday, 04:00 PM - 05:30 PM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Leveraging information in product and service supply chains	
	Chair(s): Xiaosong (David) Peng	

115-0250 The Downside, Upside, or Curvilinear side of Downtime? Evidence from Big Data

Guanyi Lu, Associate Professor, Florida State University, United States

We examine the effect of downtime on worker productivity in a retail context.

115-0308 Alternative information processing mechanisms in hospital supply chains

Xiaosong (David) Peng, Professor, Lehigh University, United States
Barbara Flynn, Professor, Indiana University, United States
Arunachalam Narayanan, Associate Professor, University of North Texas, United States
Raymond Lei Fan, Assistant Professor, Grand Valley State University, United States

We apply IPT to investigate (i) the relationship between the two information processing strategies in a hospital's SC and its cost containment, clinical quality, and patient satisfaction performance, and (ii) how these relationships may be moderated by diversity in the hospital's SC partners, clinical specialties, and patients.

115-0953 The Effects of Signaling Blockchain-based Track and Trace on Consumer Purchases

Xiaosong (David) Peng, Professor, Lehigh University, United States

Employing transactional data from a leading global e-retailer, we design a quasi-natural experiment to estimate the signaling effect of Blockchain-based Track and Trace (BCT) on consumer purchases. We find supporting evidence that BCT can stimulate consumer purchases and these effects are moderated by the degree of product level information asymmetry.

115-1773 A Semi-parametric Bayesian Model for Arrival Processes

Kaan Kuzu, Associate Professor, Lubar College of Business, Supply Chain and Operations Management, United States
Refik Soyer, Professor, School of Business, Decision Sciences and Statistics, United States
Murat Tarimcilar, Professor, School of Business, Decision Sciences and Statistics, United States

To analyze and forecast arrival processes to queuing systems, we introduce a robust Bayesian semiparametric model. We implement the model and its extensions on two real call center data sets with different characteristics. Our results indicate that the proposed model has robust performance and outperforms several models used in literature.

Contributed Session

285	Tuesday, 04:00 PM - 05:30 PM, Rainbow Spring 2	Track: Operational Excellence
	Contributed Session: Technology supporting Operational Excellence	
	Chair(s): Jayarajan Samuel	

115-0203 Sustainable Bioleaching of Lithium-ion Batteries for Critical Materials Recovery

Majid Alipanah, Student, University of Arizona, United States
Hongyue Jin, Assistant Professor, University of Arizona, United States
Yoshiko Fujita, Staff Scientist, Idaho National Laboratory, United States
Andre Anderko, CTO, OLI Systems, United States
David Reed, Senior Staff Scientist, Idaho National Laboratory, United States

Developing a sustainable bioleaching process is a promising alternative to conventional technologies for recycling lithium-ion batteries. This study optimized the bioleaching conditions through response surface methodology assisted by thermodynamic modeling. It resulted in >80% recovery of target metals and an improved net profit margin from -12% to 17%-26%.

115-1058 Effects of Software Version Homogeneity in Support Costs

Jayarajan Samuel, Assistant Professor, The University of Texas at Arlington, United States
Amruutha Chandrasekar, Data Scientist, Ericsson Inc., United States
Stephen Gilbert, Data Scientist, Ericsson Inc., United States

Tuesday, 04:00 PM - 05:30 PM

Support of software products is a profitable and cost sensitive business. Keeping customer deployments in homogenous software versions is challenging but has high rewards. Using a unique dataset from a telecommunications firm, we draw causal insights on the effects of divergent software release deployments on cost.

115-1423 Using Business Intelligence (BI) to Support Operations Management Decisions

Maria Trindade, Post Doc/Researcher, Maria Alice Trindade, Italy

Nowadays, enterprises can analyze, in real-time, operational data, to identify supply-demand mismatches and act. In this research, we intend to address the value creation of using BI tools for this purpose. We explore the use of BI to monitor KPIs and support decisions at a real-world retailer in Portugal.

Contributed Session

286

Tuesday, 04:00 PM - 05:30 PM, Barrel Spring 1

Track: POM-Marketing Interface

Contributed Session: Algorithm and Data-driven Marketing

Chair(s): Zhen Gu

115-1146 Cause Marketing and the Moderating Role of Compulsive Buying

Pi-Ying Yen, Assistant Professor, Macau University of Science and Technology, Macao, China

Hui Xiong, Associate Professor, Huazhong University of Science & Technology, China

Haoyu Liu, Assistant Professor, City University of Macau, Macao, China

Ying-Ju Chen, Professor, Hong Kong University of Science and Technology, Hong Kong, China

We investigate the sales impact of cause marketing among compulsive buyers, who repeatedly purchase in response to adverse events or emotions for a long time. Using four experiments, we uncover a significant negative interaction between compulsive buying and cause marketing; i.e., cause marketing fails to stimulate sales among compulsive buyers.

115-1178 Training Scalable Personalization Policies with Constraints

Haihao Lu, Assistant Professor, University of Chicago, United States

Duncan Simester, Professor, Massachusetts Institute of Technology, United States

Yuting Zhu, Assistant Professor, National University of Singapore, Singapore

We show how recent advances in linear programming can be adapted to the personalization of marketing actions with constraints.

115-1987 Information Design and Pricing in Two-sided Platforms: Customer-centric or Vendor-centric?

Zhen Gu, Student, UIUC, United States

We study how a platform's algorithm design and information pricing affect third-party sellers' competition and consumer search. We show that the more transparent algorithm has a non-monotonic effect on the competition between sellers and the consumer search. Different revenue models (subscription versus advertising) lead to various pricing schemes.

115-2104 Artificial Intelligence Customer Experience in the Luxury Retail Sector

Gunjan Malhotra, Associate Professor, IMT Ghaziabad, India

Gunjan Dandotiya, Student, IMT Ghaziabad, India

This study enhances research into AI applications in the luxury retail sector by presenting brand anthropomorphism, brand warmth, psychological ownership to understand the impact on purchase intention and word of mouth. The findings show that AI-enabled customer experience gains better retail experience; therefore, demand features that attract and motivate them.

Invited Session

287

Tuesday, 04:00 PM - 05:30 PM, Barrel Spring 2

Track: Procurement and Supplier Management

Invited Session: Consumer Privacy, Blockchain, and Sustainable Supply Chains

Chair(s): Wenqing Zhang

115-0102 Sourcing's effect on quality risk to the public in U.S. pharmaceutical supply chain

Molly Hughes, Student, Logistics & Marketing Department, United States

Pharmacy Benefits Managers make sourcing decisions on behalf of health plans. This study looks at one sourcing practice, removing drugs from insurance coverage, and its effect on public risk. This research focuses on a current FTC concern by expanding the boundaries of SC risk into the work of public policy.

115-0451 Green Investment

Wenqing Zhang, Associate Professor, University of Minnesota Duluth, United States

Padmanabhan Prasad, Professor, St. Mary'S University, United States

Chia-Hsing Huang, Professor, Solbridge International School of Business, South Korea

Rajesh Rajaguru, Senior Lecturer, University of Tasmania, Australia

The adoption of green technologies by firms may provide benefits that do not exceed the costs of adoption many may seek alternate-green methods that can provide output that can achieve a satisfying level of strategic performance. We use a game-theoretic model to see how marketing sustainable practices through social media

Tuesday, 04:00 PM - 05:30 PM

115-1578 Which Path to Take? Focus on Social, Environmental, or both Sustainability Dimensions

Ruth Schueltken, Student, University of Mannheim, Germany

Christoph Bode, Professor, University of Mannheim, Germany

John Macdonald, Associate Professor, Colorado State University Fort Collins, United States

When addressing sustainability, it is difficult to address the three dimensions of sustainability simultaneously. This paper draws on empirical data to examine when companies focus on the social dimension of sustainability, when they focus on the environmental dimension, and when they address both dimensions equally.

115-1795 Consumer Privacy and Dynamic Product Improvement

Jiong Sun, Associate Professor, Purdue University, United States

Yingchen Yan, Assistant Professor, Beihang University, China

We consider a non-durable good monopolist that collects consumers' purchase history in order to recognize them and subsequently tailor its product offerings for a finer market segmentation. Forward-looking consumers optimally make their decisions on product purchase and privacy disclosure. We develop a dynamic model to study the economic impacts.

Invited Session

288	Tuesday, 04:00 PM - 05:30 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Emerging Topics on POM-Economics Interface	
	Chair(s): Seetharama Chandrasekhar Manchiraju	

115-0247 Scaling sharing platforms with supply constraints with lease-to-earn contracts

Milind Sohoni, Professor, Indian School of Business, India

Achal Bassamboo, Professor, Northwestern University, United States

Neha Sharma, Student, Kellogg School of Management, United States

To operate at scale, platforms in emerging markets often finance assets and offer revenue share supply contracts. We find the optimal contract in such settings where the platform decides on revenue share to offer and monthly fee to charge the users. We also compare this to centralized platforms.

115-0354 Optimal Cardinal Contests

Goutham Takasi, Student, University of Texas at Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Milind Dawande, Professor, University of Texas Dallas, United States

We study the problem of designing an optimal cardinal contest. We use mechanism design theory to derive an optimal cardinal mechanism, and provide a convenient implementation - a decreasing reward-meter mechanism - of the optimal contest. We establish the practicality of our mechanism by showing that it is "Obviously Strategy-Proof".

115-0496 The "Netflix Model": A New Payment Model for Asymptomatic Disease Management

Zhaowei She, Assistant Professor, Singapore Management University, Singapore

Yueran Zhuo, Assistant Professor, Mississippi State University, United States

Jagpreet Chhatwal, Associate Professor, Harvard University, United States

Turgay Ayer, Professor, Georgia Tech, United States

Several state governments (e.g., Louisiana and Washington) recently entered into Netflix-style procurement contracts with pharmaceutical companies. We analyze this novel subscription-based payment model from a mechanism design perspective, and characterize conditions under which such a contract would benefit both pharma and payer, as well as improve the overall market efficiency.

115-0787 Optimal Stockist Selection and Contract Design: Evidence from a Supply Chain in India

Wei Jiang, Assistant Professor, Hong Kong University of Science and Technology, Hong Kong, China

Jussi Keppo, Professor, National University of Singapore, Singapore

Yu Long, Student, Hong Kong University of Science and Technology, Hong Kong, China

Omkar Palsule-Desai, Assistant Professor, IIMA, India

This study concerns different types of incentives when manufacturers can learn, select, and contract with stockists. We propose a parsimonious structural model that incorporates Bayesian learning, bandit selection, contract design and structural estimation, and show that the optimal contract consists of three types of incentives: competition, career concerns, and compensation.

Invited Session

289	Tuesday, 04:00 PM - 05:30 PM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Empirical Research with a Social Mission	
	Chair(s): Yao Cui Wee Kiat Lee	

115-0550 Do Predictive Scheduling Laws Work?

Wee Kiat Lee, Student, Cornell University, United States

Yao Cui, Assistant Professor, Cornell University, United States

Karan Girotra, Professor, Cornell University, United States

Tuesday, 04:00 PM - 05:30 PM

Unpredictable work schedules can negatively affect the welfare of service workers. Motivated by recent proposals to implement a predictive scheduling law, where employers must give advance notice for any schedule changes, we build a game-theoretic model to analyze the effect of the law and validate our findings with empirical evidence.

115-0740 Empirical Investigation of Side Effects of Price Change

Ozalp Ozer, Professor, University of Texas Dallas, United States
Inki Sul, Assistant Professor, Carnegie Mellon University, United States
A. Serdar Simsek, Associate Professor, University of Texas Dallas, United States

We empirically study the impact of a retailer's price adjustments of a product on customers' long term expenditure in the retailer using observational data. Through multiple approach we quantify the negative effect of price change on customer's long-term expenditure. We operationalize our estimates to increase retailer's revenue through simulation study.

115-1334 Timing Matters: Crowd-sourcing Workers in On-demand Freight Matching Platforms

Jingxuan Geng, Student, Temple University, United States
Ziqi Dong, Student, Temple University, United States
Guangwen Kong, Associate Professor, Temple University, United States
Qiuping Yu, Associate Professor, Georgetown University, United States

We study a freight-matching platforms seeking carriers to fulfill requests from customers for a future pick-up date. We find that both the sourcing cost of drivers and the matching probability are associated with the request lead time.

115-2080 The Health Consequences of Financial Access: An Empirical Analysis of Credit Availability on Healthcare Outcomes

Andrew Wu, Assistant Professor, Ross School of Business, United States
Yuan Ma, Student, Ross School of Business, United States
Jun Li, Associate Professor, Ross School of Business, United States

Bank loans are crucial sources of finance for hospitals. This paper assesses the effect of increases in local credit supply on healthcare outcomes. We show that the total admissions drop when there are more credits available in local banks, and the decrease is driven by decreases in readmissions.

Invited Session

290	Tuesday, 04:00 PM - 05:30 PM, Regency Ballroom O	Track: Empirical Research in Operations Management
	Invited Session: Empirical Advances of Blockchain Applications in SCM (II)	
	Chair(s): Stephan Wagner Maximilian Klöckner	

115-0361 The Impact of Blockchain-enabled Supply Chain Management System on Financial Performance in Manufacturing Firms

Mohammad Raihanul Hasan, Assistant Professor, State University of Bangladesh, Bangladesh
Shiming Deng, Professor, Huazhong University of Science & Technology, China

This paper examines financial performance and efficiency of inbound and outbound logistics of 144 Chinese manufacturing firms which adopted blockchain technology. Our data show that the mean change in return on asset, total inventory turnover, and Tobin-Q of these firms are 33%, 25%, and 23%, respectively, higher than comparable firms.

115-0592 How do blockchain-enabled smart contracts affect firms' operational efficiency?

Li Ding, Student, Georgia Institute of Technology, United States
YANGCHUN XIONG, Student, University of Liverpool, United Kingdom
Shu Guo, Lecturer, University of Liverpool, United Kingdom
Hugo Lam, Professor, University of Liverpool, United Kingdom
Tsan-Ming Choi, Professor, University of Liverpool, United Kingdom

We empirically examine the impact of blockchain-enabled smart contracts on firms' operational efficiency. Our analysis is based on the introduction and passage of state-level smart contract laws in the United States. We also explore how firms with different supply chain characteristics are affected differently by the smart contract laws.

115-1252 Operational Perspectives on Blockchain Applications

Stephan Wagner, Professor, ETH Zurich, Switzerland

Blockchain applications to support OSCM are growing rapidly. Rigorous empirical evidence concerning the design and implementation of blockchain in OSCM, stakeholder involvement, or the interaction with established OSCM approaches is still limited. We discuss expectations of the JOM special issue 'Operational Perspectives on Blockchain Applications' concerning theoretical and empirical advancements.

115-1488 The Role of Blockchain in Maritime Logistics

Johannes Schnelle, Student, Hamburg University of Technology, Germany
Wolfgang Kersten, Professor, Hamburg University of Technology, Germany

Information technologies play an important role to enable coordination, cooperation, and visibility in logistics. Blockchain is discussed as an approach to promote digitalization. The aim of this research is to analyze the role of blockchain in maritime logistics and the requirements that need to be considered for adoption.

Invited Session

291	Tuesday, 04:00 PM - 05:30 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Innovation and Security	
	Chair(s): Xinxue Qu	

115-1372 Pioneer or Laggard? Optimal Timing of Enterprise System Patching

Qian Jia, Student, Nanjing University, China
 Xinxue Qu, Assistant Professor, University of Notre Dame, United States
 Zhengrui Jiang, Professor, Nanjing University, China

Patching is an effective way to protect enterprise systems from exploits, however, many enterprises struggle to decide when to patch and prioritize patches adequately. This work proposes an optimal dynamic patching policy based on a large-scale Markov decision process with balancing patching cost, patching failure cost, and exploitation cost.

115-1384 Operation Dumbo Drop: To Airdrop or Not to Airdrop for Initial Coin Offering Success?

Jian Li, Student, Xi'an Jiaotong University, China
 Xiang(Shawn) Wan, Assistant Professor, Santa Clara University, United States
 Kenny Cheng, Professor, University of Florida, United States
 Xi Zhao, Professor, Xi'an Jiaotong University, China

To investigate the efficacy of token airdrop for Initial Coin Offerings (ICOs) success, we implement a regression discontinuity design by leveraging the quasi-randomization of a blockchain project's promotional airdrop campaign on the Ethereum platform. Our study contributes to the literature of ICOs and provides important and useful managerial implications.

115-2044 Impact of online consumer reviews on Product Development: The moderating role of product differentiation

Zhilei Qiao, Assistant Professor, UAB, United States

In the digital era, product developers can monitor customer satisfaction by analyzing customer reviews to update digital products. However, customer reviews are often ambiguous and difficult to interpret. In this study, we draw from the Behavioral Theory of the Firm to understand how customer feedback ambiguity influence product development.

Contributed Session

292	Tuesday, 04:00 PM - 05:30 PM, Silver Spring 1	Track: Data Science and Analytics
	Contributed Session: Analytics for Supply Chain Operations and Finance	
	Chair(s): Sara Behdad	

115-0294 Quantum Computing Applications in Operations Management

Gregory Deyong, Associate Professor, College of Business and Analytics, United States

Quantum computing offers improvements in many areas which are limited by computational complexity. While the improvements promised are attractive, there are shortcomings as well. These include failed searches and possibly identifying an incorrect solution. I will illustrate both the advantages and challenges that quantum computing presents to operations management.

115-0595 Data-driven Market Assessment of Cryptocurrency Networks Behavior

Behzad Esmaeilian, Assistant Professor, Tuskegee University, United States
 Sara Behdad, Associate Professor, University of Florida, United States

As the concept of decentralized finance is gaining momentum and more cryptocurrencies are entering the market worldwide, understanding their market behavior becomes essential. This research clarifies the daily returns and market volatility of cryptocurrencies and utilizes clustering techniques to analyze the temporal patterns of several cryptocurrency clusters.

115-0790 Dynamic Capabilities in Operations & Supply Chain - A Textual Analytic Approach

George Kurian, Assistant Professor, Eastern New Mexico University, United States

This paper explores the use of the Dynamic Capabilities framework in the field of Operations & Supply Chain Management incorporating methods such as text mining and topic modeling.

115-1948 A Data-Driven Approach for Optimal Operational and Financial Commodity Hedging

Moritz Rettinger, Student, Technische Universität München, Germany
 Christian Mandl, Professor, Technische Hochschule Deggendorf, Germany
 Stefan Minner, Professor, Technical University of Munich, Germany

Commodity procurement problems have recently been studied using data-driven that either consider operational or financial hedging. We prove the optimality of a novel combined policy using both instruments and flexible decision granularities decoupled from the derivative's maturity and study the model's learning-stability and out-of-sample generalization on real-world commodity data.

Invited Session**293**

Tuesday, 04:00 PM - 05:30 PM, Silver Spring 2

Track: Inventory and Logistics Management

Invited Session: **Transportation and Warehousing**

Chair(s): Nezh Altay

115-0662 Distracted Driving Behavior on Industrial Operators: A Forklift Drivers Perspective

Janeth Gabaldon, Student, University of North Texas, United States

Suman Niranjana, Assistant Professor, University of North Texas, United States

Arunachalam Narayanan, Associate Professor, University of North Texas, United States

brian sauser, Associate Professor, University of North Texas, United States

In intralogistics, such as warehouses and distribution centers, distractions in drivers' operators can pose a severe safety hazard for themselves and others. This study explores the self-report variables of respect for safety, cognitive failure, and polychronicity as antecedents of distracted driving to improve occupational health and safety for forklift drivers.

115-0992 Exploring User Acceptance and the Willingness to Uptake Mobility-as-a-Service: A Developing Country Perspective

Ozgur Kabadurmus, Lecturer, Clemson University, United States

Yasanur Kayikci, Assistant Professor, Sheffield Hallam University, United Kingdom

This study aims to understand the user acceptance and willingness to uptake Mobility-as-a-Service (MaaS), combining all public and private transport services in a unified gateway, in Istanbul, Turkey. The Theory of Planned Behavior is employed to measure users' intentions of utilizing MaaS mobile and web apps for their transportation needs.

115-1292 Investigating the Complete Enumeration of Routing Subproblems in Hybrid Commercial Drones Sustainable LRP

Nima Molavi, Assistant Professor, Elizabeth City State University, United States

Yue Zhang, Associate Professor, University of Toledo, United States

In the previous work, a hybrid commercial drones sustainable LRP has been modeled as a decomposed MILP and solved using GAMS-CPLEX by minimizing social, environmental, and economic costs. In this extension, the complete enumeration of routing subproblems is investigated to find the optimal routing and to improve the computation efficiency.

Invited Session**294**

Tuesday, 04:00 PM - 05:30 PM, Winter Park 49

Track: Product Innovation and Technology Management

Invited Session: **Emerging Themes in PITM**

Chair(s): Lakshminarayana Nittala Sina Moghadas Khorasani

115-0340 The Impact of Dual Conceptualizations of Brand Equity on Radical Product Launch Strategy

Junghee Lee, Assistant Professor, University of Notre Dame, United States

Mallapragada Girish, Associate Professor, Indiana University, United States

Mitchell Olsen, Assistant Professor, University of Notre Dame, United States

Daewon Sun, Professor, University of Notre Dame, United States

Dennis Yu, Associate Professor, The Reh School of Business, United States

We examine how brand equity influences the product launching strategy of a market follower that achieves radical innovations by formalizing different perceptions of brand equity: Absolute and proportional. We show that the follower should launch the radical product more if consumers perceive brand equity absolutely, rather than proportionally.

115-0815 Choice Bracketing in New Product Development

Gaoyu Xie, Student, George Washington University, United States

Janne Kettunen, Associate Professor, George Washington University, United States

Matthias Seifert, Associate Professor, IE BUSINESS SCHOOL, Spain

We study the effect of narrow and broad bracketing on decision behavior in product development. We utilize laboratory experiments where we vary product evaluation (simultaneous vs sequential). Contrary to past research, we find decision makers to be more risk averse under the broadly bracketed tasks than narrowly bracketed tasks.

115-1159 Designing Knowledge-driven Innovation Contests

Lakshminarayana Nittala, Assistant Professor, University of Dayton, United States

Sanjiv Erat, Associate Professor, University of California San Diego, United States

We develop a framework for Innovation Contests that explicitly considers knowledge generation and transfer under different modes of learning. We characterize the effort allocation of contestants from a knowledge management perspective and derive insights for optimal contest design.

115-1901 Impacts of Downstream Integration in a Supply Chain, Studying Retail Market Transition and Nano-Stores

Syd Alavi, Student, University of Utah, United States

Glen Schmidt, Professor, University of Utah, United States

Nano-stores are small, privately owned, and operated grocery outlets common in emerging economies. These traditional outlets are being challenged by modern chain retail stores. Using a survey and statistical analysis of sales databases, we study the impacts of downstream integration in the grocery supply chain to understand this market transition.

Tuesday, 04:00 PM - 05:30 PM

Sessions for Wednesday, May 24

Wednesday, 08:00 AM - 09:30 AM

Invited Session

298	Wednesday, 08:00 AM - 09:30 AM, Celebration 1	Track: Agriculture and Food Supply Chains
	Invited Session: Food Quality, Distribution, and Policy	
	Chair(s): Xiao Tan	

115-1043 Price Subsidies with or without Physical Procurement: Impact on Quality, Profits and Welfare

Aysajan Eziz, Assistant Professor, Ivey Business School, Western University, Canada
Omkar Palsule-Desai, Associate Professor, Indian Institute of Management Indore, India
Srinagesh Gavirneni, Professor, Cornell University, United States

Using a multi-stage incomplete information-based game-theoretic model, we comprehensively characterize Indian farmers' strategic production and selling decisions. We demonstrate that the government price support with multiple sales channels created by physically procuring the crop improves producer surplus when the farmers' landholdings are highly disparate, and the quality-based competition is lower.

115-1059 Spoilage Testing in the Fresh Produce Supply Chain

Baolong Liu, Assistant Professor, ShanghaiTech University, China
Yanlu Zhao, Assistant Professor, Durham University, United Kingdom

We investigate spoilage testing in the fresh produce supply chain, aiming to control spoilage and reduce food waste. Through Bayesian modeling and stochastic optimization, surprisingly, we find such tests may even lead to more wastes in the supply chain. Hence, we design effective coordination mechanisms for better supply chain performances.

115-1068 Pantry Direct: a transformative supply chain for reducing food insecurity

John Lowrey, Assistant Professor, Northeastern University, United States
Kenneth Boyer, Professor, Ohio State University, United States

We launch a direct-to-pantry retail donation program and find that 2/5 retail stores increased donations and another 2/5 stores decreased food waste. Decentralized food recovery also help address cross-sector collaboration challenges.

115-1311 Optimal Market Integration Decisions by Policy Makers: Modeling and Analysis of Agriculture Market Data

Shivam Gupta, Assistant Professor, University of Nebraska Lincoln, United States
Saurabh Bansal, Associate Professor, Penn State University University Park, United States

We consider the spectrum of all possible integration policies spanning from full isolation to complete integration, and characterize the socially-optimal market integration, under general demands. Using data from the commercial seed market in EU, we show that socially-optimal integration provides a further improvement in the social surplus by 2.8%.

Invited Session

299	Wednesday, 08:00 AM - 09:30 AM, Celebration 2	Track: Energy and Natural Resource Management
	Invited Session: Renewable Energy Adoption and Operations	
	Chair(s): Emre Nadar	

115-0445 Material Procurement and Circularity for Solar Panels

Nilsu Uzunlar, Student, Carnegie Mellon University, United States
Alan Scheller-Wolf, Professor, Carnegie Mellon University, United States
Siddharth Prakash Singh, Lecturer, UCL School of Management, United Kingdom

Solar energy adoption is estimated to increase rapidly considering technological enhancements and policy incentives. Unfortunately, this adoption faces two hurdles: lack of a circular outlook and the potential scarcity of crucial materials for manufacturing. We explore how policy initiatives and investments may be able to ameliorate both of these problems.

115-0784 Design of Efficient Feed-in Tariff and Tax Rebate Policies for Rooftop Solar Adoption

Saman TeymoorianMotlagh, Student, University of Calgary, Canada
Serasu Duran, Assistant Professor, University of Calgary, Canada
Osman Alp, Associate Professor, University of Calgary, Canada

Governments incentivize rooftop solar investments through feed-in tariff policies and tax rebates. Such policies put stress on the electricity distribution system and utility profits, increasing the bills of non-solar households. We identify the conditions for efficient feed-in tariff policies and optimal rebate levels that will make all stakeholders not worse-off.

115-0947 Optimal Hour-Ahead Commitment and Storage Decisions of Wind Power Producers

Emre Nadar, Assistant Professor, Bilkent University, Turkey
Ece Cigdem Karakoyun, Student, Bilkent University, Turkey
Harun Avci, Student, Northwestern University, United States
Woonghee Huh, Professor, Sauder School of Business, UBC, Canada
Ayse Selin Kocaman, Assistant Professor, Bilkent University, Turkey

Wednesday, 08:00 AM - 09:30 AM

We study the energy commitment, generation and storage problem for a wind farm paired with a battery. We model this problem as a Markov decision process and characterize the optimal policy structure. We implement our structural results into a heuristic solution method that yields near-optimal solutions within a few minutes.

115-2038 Power Purchase Agreements with Renewable Energy Producers

Zuguang Gao, Student, University of Chicago, United States

Nur Sunar, Associate Professor, Kenan-Flagler Business School, United States

John Birge, Professor, University of Chicago, United States

We consider a firm that aims to sign a power purchase agreement (PPA) with a renewable energy producer. Using a stochastic control framework, we identify the optimal PPA design for the firm. Our analysis generates various valuable insights for both managers and policy makers.

Contributed Session

300	Wednesday, 08:00 AM - 09:30 AM, Celebration 3	Track: Healthcare Operations Management
	Contributed Session: Lean Operations in Healthcare	
	Chair(s): Ahmad Ashkanani	

115-1342 Success Factors for Kaizen Events in Hospitals

Kimberly Harry, Student, Virginia Tech, United States

Wiljeana Glover, Associate Professor, Babson College, United States

Kaizen events (KEs) provide valuable opportunities to address healthcare challenges. This study conducts a systematic literature review to identify the critical success factors (CSFs) for KEs in hospitals. We found across 48 papers that most CSFs occur in the KE Team Design, Organization, and KE Process success factor categories.

115-1530 Maximizing the Impact of Lean: The Importance of Soft and Hard Practices

Ahmad Ashkanani, Assistant Professor, Kuwait University, Kuwait

Using longitudinal data and mixed methods, we examine and identify the challenges and success factors associated with implementing soft and hard lean practices in a large US healthcare system undergoing a lean transformation process.

115-1675 Lean Healthcare: Preparation and Implementation Capabilities

David Barrett, Assistant Professor, Ivey Business School, Western University, Canada

Fernando Naranjo, Assistant Professor, Niagara University, United States

Larry Menor, Associate Professor, Ivey Business School, Western University, Canada

We present the results obtained from a multiple case study that describes what constitutes lean preparation capabilities and lean implementation capabilities enabling lean deployment in the healthcare organization context. Our findings are summarized in a theoretical framework that illustrates the structure and association of these linkages.

115-2087 The role of lean in building crisis response capabilities

Altricia Dawson, Assistant Professor, University of Nottingham, United Kingdom

Nicola Burgess, Associate Professor, University of Warwick, United Kingdom

Using insights from the dynamic capabilities and continuous improvement perspectives we conduct a multiple case study of five British hospitals to explore how lean adapts to respond to crisis. We find that a socio-technical implementation of lean is key to creating the dynamic process improvement capability needed during crisis.

Invited Session

301	Wednesday, 08:00 AM - 09:30 AM, Celebration 4	Track: Healthcare Operations Management
	Invited Session: Healthcare Operations and Information Technology	
	Chair(s): Sidhartha Das	

115-0217 Addressing the Challenges with Integration and Interoperability of Healthcare Management Data

Vijay Agrawal, Professor, University of Nebraska Kearney, United States

Vipin Agrawal, Professor, University of Texas at San Antonio, United States

Poonam Khanna, Associate Professor, University of Texas at San Antonio, United States

Sherri Harms, Professor, University of Nebraska at Kearney, United States

Aravind Menon, Epidemiologist, Two Rivers Public health department, United States

The complexities in collecting, analyzing, and interpreting data increase manifold when dealing with integration and interoperability, particularly in the decentralized health care systems in the United States. We focus on evolution of dealing with these challenges in the United States and other such regions as Europe and Australia.

115-0218 Alternative Solutions to Address Integration and Interoperability of Healthcare Management Data.

Vijay Agrawal, Professor, University of Nebraska Kearney, United States

Vipin Agrawal, Professor, University of Texas at San Antonio, United States

Poonam Khanna, Associate Professor, University of Texas at San Antonio, United States

Sherri Harms, Professor, University of Nebraska at Kearney, United States

Aravind Menon, Epidemiologist, Two Rivers Public health department, United States

Wednesday, 08:00 AM - 09:30 AM

Recent attempts to integrate electronic patient records have met with limited success. We assess the degree of complexity of healthcare management systems, examine existing efforts to improve them, and propose alternative cost-effective solutions. We evaluate alternatives in addressing these challenges and enhancing the quality of patient care.

115-1074 Medical Capabilities, Hospital Workforce, HIT and Hospital Performance

Sidhartha Das, Professor, George Mason University, United States

Amitava Dutta, Professor, George Mason University, United States

Nirup Menon, Professor, George Mason University, United States

This study examines the impact of medical capabilities and healthcare information technologies (HIT) on hospital performance. It categorizes medical capabilities into diagnostic and therapeutic types, and using panel data, studies the direct and interaction effects of the two medical capabilities types and hospital workforce with HIT, on hospital performance measures.

115-1630 Proposing A Circular Information Model for Ontario's Health System

Hamid Noori, Professor, Wilfrid Laurier University, Canada

Jocelyne Diamonon, Professor, Wilfrid Laurier University, Canada

christopher both, Professor, Wilfrid Laurier University, Canada

The current landscape of health data sharing and organization in Ontario, Canada, can be classified as a pipeline model characterized by its lack of visibility or in other words, lack of interoperability, access, privacy, and efficiency. We investigate how the current health system can be shifted to a circular model.

Invited Session

302 Wednesday, 08:00 AM - 09:30 AM, Celebration 5 Track: Healthcare Analytics

Invited Session: **Deploying Health Technology**

Chair(s): David Rea Eric Xu

115-0990 Nurse Staffing During a Pandemic: Prediction and Mitigation of In-Hospital Infections

Buyun Li, Student, Indiana University, United States

Jonathan Helm, Associate Professor, Kelley School of Business, United States

Pengyi Shi, Associate Professor, Purdue University, United States

Kurt Bretthauer, Professor, Indiana University, United States

We offer an estimation method to a dynamic disease transmission model to model and predict the in-hospital transmission of the disease and the infection of the healthcare workers. Also, we offer analysis on mitigation methods via staffing to reduce infection and improve care quality.

115-1381 E-Access versus Physical Access: An Examination of Telehealth

Eric Xu, Assistant Professor, Mississippi State University, United States

Kevin Linderman, Professor, Penn State University, United States

While telemedicine has existed for half a century, only recent telecommunication advancements have increased the pace of adoption amongst patients and practitioners. Therefore, we examine the impact of broadband and physical access on telemedicine uptake. Using a unique dataset of insurance claims, we examine asynchronous and synchronous telehealth visits.

115-1847 Smartphone Use, Social Support, and Sleep Health

Idris Adjerid, Assistant Professor, Virginia Polytechnic Institute And State University, United States

Shaokang Yang, Student, Virginia Polytechnic Institute And State University, United States

Jiayi Liu, Assistant Professor, Virginia Polytechnic Institute And State University, United States

The paper aims to investigate the impact of the pre-sleep smartphone use on users' sleep health. Moreover, we examine the heterogeneous impact of pre-sleep mobile communication activities on one's sleep health, with a particular focus on the social closeness and social relationship between the smartphone user and the contacts.

Invited Session

303 Wednesday, 08:00 AM - 09:30 AM, Celebration 6 Track: Healthcare Analytics

Invited Session: **Health IT and Analytics**

Chair(s): Tan (Suparerk) Lekwijit

115-0094 The Value of Analytics Partnerships for Biopharmaceuticals

Jiatao Ding, Student, INSEAD, Singapore

Niyazi Taneri, Associate Professor, University of Cambridge, United Kingdom

Michael Freeman, Assistant Professor, INSEAD, Singapore

Through analytics partnerships, biopharmaceutical firms aim to gain complementary capabilities and streamline operations. In an industry with notoriously low success rates, improvements on these fronts translate to more products with longer periods of on-patent sales. We study shareholder value implications of such partnerships and when they add the most value.

115-0196 Is Telemedicine Here to Stay? Equilibrium Analysis of an Outpatient Care Queueing Game

Xiaole (Alyssa) Liu, Student, New York University, United States

Mor Armony, Professor, New York University Stern School of Business, United States

Wednesday, 08:00 AM - 09:30 AM

Empirical studies observed that telemedicine could increase demand for in-person visits and overcrowd the clinic. We develop a queueing game model to assess the impact of telemedicine in equilibrium, which allows us to characterize the optimal resource allocation for outpatient clinics and the conditions under which introducing telemedicine is beneficial.

115-0606 MDscan: An Explainable Artificial Intelligence Algorithm for Mental Health Screening

Salih Tutun, Lecturer, Washington University in St Louis, United States

Ali Tosyali, Assistant Professor, Rochester Institute of Technology, United States

Kazim Topuz, Assistant Professor, University of Tulsa, United States

Anol Bhattacharjee, Professor, University of South Florida, United States

This paper presents an explainable artificial intelligence algorithm called MDscan for screening patients for ten mental disorders based on their responses to the SCL-90-R clinical questionnaire. MDscan converts patients' SCL-90-R responses to a full-color explainable image to diagnosis, classify, and monitor mental health statuses of patients.

115-1025 Waiting Online versus In-Person in Outpatient Clinics: An Empirical Study on Visit Incompletion

Jimmy Qin, Student, Columbia University, United States

Carri Chan, Professor, Columbia University, United States

Jing Dong, Associate Professor, Columbia University, United States

Utilizing data from two large outpatient clinics, we show that intra-day delay increases telemedicine service incompletion rate but does not impact in-person service incompletion. Our counterfactual analysis indicates that not correctly differentiating the types of incompletions due to intra-day delays from no-show can lead to highly suboptimal patient sequencing decisions.

Invited Session

304	Wednesday, 08:00 AM - 09:30 AM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: Studies in Environmental Sustainability	
	Chair(s): Suvrat Dhanorkar Rick Hardcopf	

115-0058 Green Product-Service Innovation, Patents, and Nationals Sustainable Development Goals

Marco Opazo-Basaez, Associate Professor, University of Deusto, Spain

Oscar Bustinza, Professor, University of Granada, Spain

Luis Molina-Fernandez, Professor, University of Granada, Spain

This article draws on hybrid manufacturing, patents, and nationals' achievement related to the United Nations Sustainable Development Goals (SDGs). We focus specifically on green hybrid organizations, a particular kind of firms that entwines digital capabilities, product-service innovation (servitization), and environmentally focused operational initiatives in convergence with their performance objectives.

115-0503 Sustainability Orientation, Sustainability Implementation and Brand Image in Service firms

Sandeep Jagani, Assistant Professor, Illinois State University, United States

Vafa Saboori-Deilami, Associate Professor, Dominican University of California, United States

This paper investigates the direct and indirect effects of sustainability orientation (i.e., the firm's strategic intent toward sustainability) and sustainability implementation (i.e., translating the strategic intent into actionable practices) in the service sector on customers' perceptions of the brand image. The findings are based on primary and secondary data sources.

115-0853 Complements or substitutes? Social scrutiny, supply chain social strategies and firms' environmental performance

Xiaojin Liu, Assistant Professor, Virginia Commonwealth University, United States

Jeff Shockley, Associate Professor, Virginia Commonwealth University, United States

Jeffery Smith, Professor, Virginia Commonwealth University, United States

Jayanth Jayaram, Professor, University of Oklahoma, United States

There is an increasing need for global firms to improve and maintain socially and environmental responsible operations within organizations and in supply chains. In this study, we empirically investigate how a firm's supply chain social strategies interacts with the external social scrutiny to affect the firms' environmental performance.

115-1208 Optimizing Curbside Recycling Behaviors through use of Green Nudges and AI Generated Feedback

Erin McKie, Assistant Professor, Ohio State University, United States

Jane Iversen, Student, Ohio State University, United States

Aravind Chandrasekaran, Professor, Ohio State University, United States

With this study, we aim to investigate how two forms of recycling educational mechanisms ("pure nudges and moral nudges") may impact households' recycling performance. We will also examine how the effectiveness of AI-Generated Feedback compares with traditional educational mailers.

Invited Session

305	Wednesday, 08:00 AM - 09:30 AM, Celebration 8	Track: Sustainable Operations Management
	Invited Session: Operations at the Base of the Pyramid	
	Chair(s): Chengcheng Zhai	

115-1180 Keep Water Flowing: The Hidden Crisis of Rural Water Management in Sub-Saharan Africa

Chengcheng Zhai, Student, Kelley School of Business, United States

Wednesday, 08:00 AM - 09:30 AM

Rodney Parker, Associate Professor, Indiana University, United States

Kurt Bretthauer, Professor, Indiana University, United States

Jorge Mejia, Associate Professor, Indiana University, United States

Alfonso Pedraza, Professor, Indiana University, United States

It is estimated that one in four handpumps in rural SSA are broken. In this paper, we examine different water maintenance programs and develop a stochastic dynamic programming model to help NGOs improve their water points functionality.

115-1353 Leapfrogging for Last-mile Delivery in Health Care

Harriet Jeon, Student, Wharton School, University of Pennsylvania, United States

We examine whether and the extent to which a technological innovation--delivery drones--leapfrogs a traditional infrastructure investment--specifically, paving roads. Using data from Rwandan public hospitals, we compare the impact of adopting drone delivery for blood transport on the inventory management of blood products and on health outcomes vis-à-vis paving roads.

115-1810 Rent-to-Own Contracts in Developing Economies

Jose Guajardo, Assistant Professor, University of California Berkeley, United States

Elaheh Rashidinejad, Student, Rotman School of Management, Canada

Gonzalo Romero, Assistant Professor, University of Toronto, Canada

Hosain Zaman, Post Doc/Researcher, University of Toronto, Canada

We study consumer's payment behaviour under Rent-to-Own business models in developing economies where income uncertainty and hassle costs exists. We use a dynamic programming model to examine different contract designs that firms selling off-grid energy products offer to their customers to minimize expected time to ownership and improve social welfare.

115-2070 Application mistakes and information frictions in college admissions

Ignacio Rios, Assistant Professor, UT Dallas, United States

Tomas Larroucau, Assistant Professor, Arizona State University, United States

Anais Fabre, Student, Toulouse School of Economics, France

Christopher Neilson, Associate Professor, Yale University, United States

We study application mistakes in college admissions. To alleviate these, we designed and implemented a field experiment providing information to help students to improve their applications, and we find that students that are less likely to get admitted are the ones who benefit the most.

Invited Session

306	Wednesday, 08:00 AM - 09:30 AM, Celebration 9	Track: Supply Chain Management
	Invited Session: Recent Issues in SCM	
	Chair(s): Yulan Wang Kai Pan	

115-0040 Robust Sourcing under Multi-level Supply Risks: Analysis of Random Yield and Capacity

Kai Pan, Associate Professor, The Hong Kong Polytechnic University, Hong Kong, China

Ming Zhao, Assistant Professor, University of Delaware, United States

Nickolas Freeman, Associate Professor, University of Alabama Tuscaloosa, United States

We consider the optimal sourcing problem when the available suppliers are subject to ambiguously correlated supply risks. We propose a distributionally robust model that accommodates multiple levels of supply disruption and can utilize data-driven estimates of the underlying correlation. Analytical and numerical results are provided.

115-0130 Improving Health Outcomes with Less Cost? Provision of Mobile Clinic in Developing Economies

Fang Liu, Associate Professor, University of Chinese Academy of Sciences, China

Pengfei Guo, Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Yulan Wang, Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Yuejuan Xi, Post Doc/Researcher, University of Chinese Academy of Sciences, China

Consider a public healthcare system consisting of a hospital, a mobile clinic (MC), and a population of potential patients. We stand on the government's perspective to investigate how the mobile clinic can reduce the system's healthcare spending while improving the population's health outcomes.

115-0679 Dual Sourcing under Random Yields and Quality Uncertainty: Supplier Diversification, Capacitated Competition, and Fairness Concerns

Yanli Tang, Lecturer, Sun Yat-Sen University, China

Xin Wang, Assistant Professor, Hong Kong University of Science & Tech, Hong Kong, China

Yulan Wang, Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Dual sourcing is used to reduce supply risks, induce supplier competition, and gain large capacity. However, sourcing components from two suppliers can cause product quality heterogeneity and consumers' fairness concerns. We characterize the impacts of these factors and analyze how they jointly affect equilibrium outcomes of a supply chain.

115-1788 Managing Panic Buying with Bayesian Persuasion

Tianqi Song, Student, City University of Hong Kong, Hong Kong, China

Biyang Shou, Professor, City University of Hong Kong, Hong Kong, China

Pengfei Guo, Professor, City University of Hong Kong, Hong Kong, China

Wednesday, 08:00 AM - 09:30 AM

We study how a retailer with private information can send persuasive signals to influence the customers' panic buying behaviors under supply disruption risk. We apply the Bayesian persuasion framework and derive the optimal joint decisions of information design and inventory control.

Invited Session

307	Wednesday, 08:00 AM - 09:30 AM, Celebration 10	Track: Supply Chain Management
	Invited Session: Reshaping operations management with data-driven techniques and emerging technologies	
	Chair(s): Xinjie Xing	

115-0278 Interoperability of data in the supply chain management

Daniel Luiz Nascimento, Professor, CERTI, Brazil

Flavio Magno, Project Manager, CERTI, Brazil

Alessandra Roeder, Project Manager, CERTI, Brazil

Diego Calvetti, Post Doc/Researcher, CERTI, Portugal

Guilherme Tortorella Tortorella, Associate Professor, University of Melbourne, Australia

This study proposes an architecture that automatizes the data exchange between, enhancing the interoperability across the supply chain. A case study in an oil company was conducted to illustrate the approach. Results suggest that the interoperability of data significantly improved the collaboration between customers and agents, mitigating redundancies and errors.

115-1360 Data Driven Mechanism Design and the Value of Data

Sikun Xu, Student, Washington University in St. Louis, United States

This paper considers the classical principal-agent problem under observational information, where only historical data is known to the principal. Furthermore, I propose the marginal value of data, defined as the expected increase in the objective value if one additional data sample is provided to the principal.

Invited Session

308	Wednesday, 08:00 AM - 09:30 AM, Celebration 11	Track: Manufacturing Operations
	Invited Session: Socially responsible supply chain management	
	Chair(s): Yen-Ting Lin	

115-0109 Examining the Impact of Lenient and Harsh Audit Ratings on Supplier CSR

Tim Kraft, Associate Professor, 2801 Founders Dr, United States

Xiaojin Liu, Assistant Professor, Virginia Commonwealth University, United States

H. Sebastian Heese, Professor, North Carolina State University, United States

Robert Handfield, Professor, North Carolina State University, United States

Balaji Soundararajan, Student, North Carolina State, United States

We study how lenient and harsh audit ratings impact supplier CSR. Using audit data, we find lenient ratings reduce CSR severity. Testing moderators, we find that greater leniency helps to reduce CSR severity when a facility has low compliance ability and has been audited a small number of times.

115-1192 Implications of ride-hailing: Replacing or increasing personal and rental car ownership?

Jianing Li, Student, Purdue University, United States

Gokce Esenduran, Assistant Professor, Purdue University, United States

Constructing a detailed consumer utility model, we identify how ride-hailing platforms affect a dual-channel supply chain: when the unit manufacturing cost is sufficiently high, rental cars decrease while personal cars increase, leading to an increase in the overall ownership and, thus, the environmental impact.

115-2012 Electricity Pricing Rules for Residential Solar plus Storage: Economic and Environmental Impacts

Nur Sunar, Associate Professor, Kenan-Flagler Business School, United States

Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States

Sinan Yorukoglu, Student, University of North Carolina at Chapel Hill, United States

We analyze the impacts of different pricing rules for residential solar plus storage customers on environment, utility profit and customer benefit. Using a large-scale dataset from California, we quantify these impacts. Our paper shows that prominent practical insights may fail depending on the adoption level of residential solar-plus-storage technology.

Invited Session

309	Wednesday, 08:00 AM - 09:30 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Tutorial on Sustainable Humanitarian Operations	
	Chair(s): Iana Shaheen	

115-2137 Tutorial on Sustainable Humanitarian Operations

Iana Shaheen, Assistant Professor, University of Arkansas, United States

Wednesday, 08:00 AM - 09:30 AM

In this session, an experienced and diverse list of panelists from academia will discuss the indicators and strategies that affect the sustainability of the humanitarian supply chains. We will explore how recent practices by research and practitioners in the area of sustainable disruption response can enhance humanitarian operations.

Contributed Session

310	Wednesday, 08:00 AM - 09:30 AM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Evacuation, Warnings	
	Chair(s): Irineu Brito Jr	

115-0806 Providing Access where Needed: Equity and Inclusion through Contraceptive Implant Removals by Mobile Outreach Teams

Lisanne van Rijn, Student, Erasmus University Rotterdam, Netherlands
Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands
Dominik Gutt, Assistant Professor, Rotterdam School of Management, Netherlands
Luk Van Wassenhove, Professor, INSEAD, France

The demand for contraceptive implant removals is rising due to increasing uptake of the contraceptive implant. Mobile outreach teams can help achieve equitable and inclusive removal service provisioning. We perform a regression analysis to identify drivers of the need for outreach removal services and how operational decisions impact this need.

115-1454 Fleet sizing: Benchmarking opportunities in the humanitarian sector

Laura Turrini, Associate Professor, European Business School, Germany
Nathan Kunz, Associate Professor, University of North Florida, United States
Maria Besiou, Professor, Kuehne Logistics University, Germany
Luk Van Wassenhove, Professor, INSEAD, France

Our paper provides fleet managers with useful insights for benchmarking their fleet. We empirically estimate what drives the fleet size of multiple humanitarian organizations in different countries. The analyzed elements include organization size, number of target beneficiaries and country variables like infrastructure and income inequality.

115-1719 Do tweets and search trends relate to the distribution of ineffective medicines during the pandemic?

Roberto Fray Da Silva, Post Doc/Researcher, Universidade De Sao Paulo, Brazil
Nathan Bruno, Student, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil
Flaviane Saraiva, Student, University of Sao Paulo, Brazil
Celso Hino, Post Doc/Researcher, São Paulo University, Brazil
Irineu Brito Jr, Professor, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil

The COVID-19 pandemic and associated infodemic led to confusion and increased demand for various pharmaceutical products, such as hydroxychloroquine and ivermectin. This study correlates the web search and Twitter citation with the monthly sales of these products considering the period from March 2020 to December 2021 throughout Brazil.

Invited Session

311	Wednesday, 08:00 AM - 09:30 AM, Celebration 14	Track: Service Operations
	Invited Session: Service Operations in Healthcare	
	Chair(s): Sanjeev Bordoloi	

115-0603 Performance tradeoff under VBP program structure

Xin Ding, Assistant Professor, Rutgers Business School, United States

In this study, I examine how hospitals trade off various performance metrics under the ongoing value-based purchasing program structure. The longitudinal study supports performance tradeoffs and also suggests that the tradeoff effect varies by different types of hospitals and is also subject to market conditions.

115-1115 Evaluation of Hospitals using DEA

Sanjeev Bordoloi, Associate Professor, University of St. Thomas, United States
Mansoo Cho, Student, University of St. Thomas, United States

Improvement in operational efficiency is very important for any hospital. We obtained operational data from Centers for Medicare and Medicaid Services (CMS) for a list of hospitals from across the country and applied Data Envelopment Analysis (DEA) to evaluate performance. We also draw useful managerial implications to improve efficiency.

115-1599 Revisiting the Operating Room Utilization Problem in Surgical Services

Ravi Behara, Professor, Florida Atlantic University, United States
Saharnaz Mehrani, Assistant Professor, Florida Atlantic University, United States

Operating room (OR) scheduling significantly impacts patient and healthcare-provider satisfaction and has clinical and financial effects on hospitals. This study investigates the application of data analytics and optimization to improving OR utilization while considering patients and providers criteria. We perform numerical experiments on real data from a large urban hospital.

115-1670 The impact of queue rank changes on the waiting time in the Emergency Department

Lu Wang, Assistant Professor, Ball State University, United States

Wednesday, 08:00 AM - 09:30 AM

Suman Mallik, Associate Professor, University of Kansas, United States

Mazhar Arkan, Associate Professor, University of Kansas, United States

We empirically investigate the impacts of the change in patient queue rank on patient waiting time in the ED. We demonstrate that the additional arrivals of patients before the end of waiting time contribute to the queue rank changes, and they both affect the patient waiting time significantly.

Invited Session

312	Wednesday, 08:00 AM - 09:30 AM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Ride Hailing Platforms	
	Chair(s): Masoumeh Shamsavari	

115-0658 Sustainability Of Ride-Hailing Platform: A Game-Theoretic Approach

Amir Zamani, Student, Temple University, United States

Subodha Kumar, Professor, Temple University, United States

In this study we analyze how the changes in the benefit that drivers obtain from the ride-hailing platform affect (i) participation in the network and (ii) the prices of each ride. We are using game theory to determine the best decision the platform can make about prices.

115-1720 Quick Ride or Lower Fee? Price and Waiting-time Differentiation in Ride-Hailing Platforms

Masoumeh Shamsavari, Student, Temple University, United States

Emre Demirezen, Assistant Professor, University of Florida, United States

Subodha Kumar, Professor, Temple University, United States

Ride-hailing platforms allow consumers to choose between two prices associated with different levels of waiting time. In this paper, we concentrate on the impacts of this pricing strategy on the platform's profit and its competitive position in a monopoly and a duopoly environment with a game theory approach.

115-1819 Give Uber and Lyft a Ride: Ride-Hailing to Mobility as a Service (MaaS) Platforms

Samayita Guha, Assistant Professor, Florida International University, United States

Emre Demirezen, Assistant Professor, University of Florida, United States

Subodha Kumar, Professor, Temple University, United States

Ride-hailing platforms like Uber and Lyft are engaging in additional services to become financially sustainable and transforming themselves into mobility as a service (MaaS) platforms. In this paper, we study the impact of additional services on the driver compensation and daily operations of MaaS platforms in a competitive setting.

Invited Session

313	Wednesday, 08:00 AM - 09:30 AM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Emerging Topics in Empirical Operations	
	Chair(s): Robert Nieuwehn	

115-0210 From Mobility to Traffic: How Patient Movement Preferences Altered Healthcare Visits during Covid-19

Robert Nieuwehn, Assistant Professor, Kelley School of Business, United States

Bradley Staats, Professor, University of North Carolina Chapel Hill, United States

Though serious consequences follow delayed or omitted care, with the emergence of Covid-19 in March of 2020, traffic to many healthcare clinics fell dramatically overnight. Using aggregate measures of patient mobility, this study seeks to characterize factors which explain the drops in traffic and so enable better traffic prediction.

115-0673 Does the Seller's Response Time Affect the Buyer's Concession? Evidence from eBay Bargaining

Guihua Wang, Assistant Professor, University of Texas Dallas, United States

Wen Zhang, Assistant Professor, Baylor University, United States

We empirically analyze the effect of the seller's response time on the buyer's concession in online marketplace bargaining. We find that a one-percent increase in the seller's response time increases the buyer's concession by 0.435%. We also find that the effect is heterogeneous across item categories and conditions.

115-1238 The impacts of digital twin on supply chain resilience and robustness: A system lens view

Di Li, Senior Lecturer, University of Warwick, United Kingdom

Donato Masi, Reader, Aston Business School, United Kingdom

Chao Deng, Student, University of Warwick, United Kingdom

Rebecca Wilde, Senior Lecturer, University of Warwick, United Kingdom

As one post-pandemic effect, companies realized the essentials of supply chain resilience and robustness thus endeavour to improve them, which requires a view of system lens for achieving a fundamental upgrade. This paper will reveal the digital twin system in contributing to resilience and robustness, embedded roles of multi-digital capabilities

115-2067 Optimizing Food Programs using Hybrid Data Sources: Models and Experimental Evidence from India

Alp Sungu, Student, London Business School, United Kingdom

Ali Aouad, Assistant Professor, London Business School, Great Britain

Kamalini Ramdas, Professor, London Business School, United Kingdom

Wednesday, 08:00 AM - 09:30 AM

We study the design of in-kind food subsidy programs targeted at underserved communities. In a field experiment in India, we exogenously vary the subsidized food. Based on estimates of the take-up rates, we uncover a tradeoff between the nutrient richness of different staples and their attractiveness to customers.

Contributed Session

314	Wednesday, 08:00 AM - 09:30 AM, Coral Spring 2	Track: Global Supply Chain Management
	Contributed Session: Meeting the challenges of cross-border supply chain	
	Chair(s): Arvind Upadhyay	

115-0291 The "Out-of-China" Effect: Supply Chain Adaptation to Geopolitical Disruptions

Travis Kulpa, Student, University of Arkansas - Fayetteville, United States

We examine whether US imposed tariffs on Chinese products (HS 10-digit level) beginning in 2018 led to sourcing pattern changes for those products to nearshore countries or other Asian locations. We test product-level moderating hypotheses of sourcing interdependence and upstreamness. Fixed effects models are used to test the hypotheses.

115-0534 Sustainable Supply chain Practices Across Multiple Countries.

Purushottam Meena, Associate Professor, College of Charleston, United States

Rita Difrancesco, Assistant Professor, Eada Business School, Spain

Gopal Kumar, Associate Professor, iim raipur, India

This paper studies supply chain sustainability implementation practices across different regions. Primary data is collected and analyzed using the structural equation modeling to compare the sustainability implementation status, benefits, and barriers across European and South American companies. The results show promising insights for academicians and practitioners.

115-1928 Challenges and Opportunities in Cross-Border Supply Chain

Arvind Upadhyay, Professor, University of Stavanger, Norway

Farheen Naz, Student, University of Stavanger, Norway

Cross-Border supply chain is increasing globally due to the reduced logistics cost, tariffs, and trade barriers. However, there are significant collaboration challenges due to different rules, regulations and systems. Digitization and sustainable development goals are creating opportunities for more collaborations. This paper examines challenges and opportunities in cross-border supply chain.

115-2071 Using Flipped Learning to Prepare Talent for the Global Supply Chain

William Swart, Professor, East Carolina University, United States

Kenneth MacLeod, Associate Professor, East Carolina University, United States

The unique characteristics of global supply chains are presented together with the required talents for professionals to successfully manage them. Flipped learning is presented as an ideal pedagogy for both formal and informal development of those talents.

Invited Session

315	Wednesday, 08:00 AM - 09:30 AM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Managing disruption risk in supply chain	
	Chair(s): Florian Lucker	

115-0664 Sample Complexity of Policy Learning for Inventory Control with Censored Demand

Xiaoyu Fan, Student, New York University, United States

Boxiao (Beryl) Chen, Associate Professor, University of Illinois at Chicago, United States

Zhengyuan Zhou, Assistant Professor, New York University, United States

We study both single-period and infinite-horizon inventory models with unknown demand distribution and propose sampling-based approximation policies using censored demand data. We develop upper bounds for the number of samples required to guarantee the accuracy of our proposed policy, which is shown to match the existing lower bound.

115-0678 Trade credit contracts under weather risk in supply chains

Piyal Sarkar, Assistant Professor, University of Wisconsin, Green Bay, United States

Wahab Ismail, Professor, Ryerson University, Canada

Liping Fang, Professor, Ryerson University, Canada

The study explores the coordination mechanism of trade credits in supply chain with weather-related uncertainties. It contributes to the understanding of trade credit contracts and their implementations to withstand weather and credit risks in supply chains. Industries can use these contracts to coordinate supply chains under weather risk.

115-1097 The Lost Decade for U.S. Manufacturing Jobs: A Story of Cost and Risk

Nikolay Osadchiy, Associate Professor, Emory University, United States

Sridhar Seshadri, Professor, University of Illinois Urbana-Champaign, United States

Shi Qiu, Student, University of Illinois at Urbana Champaign, United States

We propose two perspectives on U.S. manufacturing job losses to countries in Asia in 1990-2011: production cost arbitrage and the management of supply-demand mismatch. Combined with model prediction, we observe strong support for the cost arbitrage motive in 1990-2000 and the risk management motive after China's entry into the WTO.

Wednesday, 08:00 AM - 09:30 AM

115-1513 Using anticipatory orders to manage disruption risk over a short product life cycle

Florian Lucker, Assistant Professor, Bayes Business School, United Kingdom

Sunil Chopra, Professor, Kellogg School of Management, United States

We study the impact of supply disruptions over short product life cycles where future demand depends on current sales. We introduce the concept of anticipatory orders: orders that are moved from a future period to an earlier period. We show that despite incurring additional holding cost, anticipatory orders are valuable.

115-1937 Supply chain risk and resolution: An empirical study of stock market reactions

Keno Theile, Student, Kühne Logistics University, Germany

Christian Hofer, Associate Professor, University of Arkansas, United States

Vinod Singhal, Professor, Georgia Institute of Technology, United States

Kai Hoberg, Professor, Kuehne Logistics University, Germany

The estimation of supply chain risk and resolution of supply chain risk has been challenging due to missing firm-level data. We propose a measure based on textual analysis of quarterly earnings calls. While SC risk has a negative effect on stock returns, we find that resolution has a positive effect.

Invited Session

316	Wednesday, 08:00 AM - 09:30 AM, Blue Spring 2	Track: Supply Chain Risk Management
	Invited Session: Frontiers for Supply Chain Risk Management	
	Chair(s): Burcu Tan Erciyes	

115-0107 Capacity Investment and Pricing Strategies across International Markets under Currency Exchange Rate and Tariff Uncertainty

Murat Erkoc, Associate Professor, University of South Carolina Aiken, United States

Huaqing Wang, Associate Professor, Palm Beach Atlantic University, United States

Chunlin Wang, Lecturer, University of New Mexico, United States

Yu Xia, Professor, College of William and Mary, United States

This paper analyzes capacity investment and pricing strategies for a multinational manufacturer to hedge against exchange rate and tariff uncertainties in the competitive global market. An analytic model is built to study the duopoly competition in a foreign market with both currency exchange rate and tariff rate as exogenous variables.

115-0141 Capabilities Development for Supply Chain Resilience

Dun Li, Assistant Professor, Guizhou University, China

Bangdong Zhi, Lecturer, University of Bristol, United Kingdom

Tobias Schoenherr, Professor, Michigan State University, United States

Xiaojun Wang, Professor, University of Bristol, United Kingdom

This study examines the past, present, and future of supply chain resilience (SCR) research in the context of COVID-19. Specifically, a total of 1717 papers in the SCR field are classified into eleven thematic clusters, which are subsequently verified by a supervised machine learning approach.

115-0258 Concurrent sourcing under imperfectly visible random lead times

Thomas Cassidey, Student, University of Alabama Tuscaloosa, United States

Nickolas Freeman, Associate Professor, University of Alabama Tuscaloosa, United States

Sharif Melouk, Professor, University of Alabama Tuscaloosa, United States

We consider the case in which a manufacturer may receive an updated delivery date for components from an outsource supplier that may alter the a priori production plan using those components. We offer insights which firms can use to understand when and how to employ in-house production or expedited supply.

115-1254 Managing Product Reusability under Supply Disruptions

Prashant Chintapalli, Assistant Professor, Ivey Business School, Canada

Kumar Rajaram, Professor, UCLA Anderson School of Management, United States

Nishant K Verma, Assistant Professor, IIM Bangalore, India

We model and analyze product reusability, in the presence of supply disruptions. Our analysis shows that increasing product's reusability through better product design is beneficial to a certain extent when the probability of supply disruption increases. Doing so, when the disruption probability, could backfire and hurt firm's profits.

Invited Session

317	Wednesday, 08:00 AM - 09:30 AM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research in Innovation and Product Development	
	Chair(s): Manpreet Hora Param Pal Singh Chhabra	

115-0562 Knowledge Accumulation and Innovation in Buyer-Supplier Networks

Shubhobrata Palit, Assistant Professor, Esade Business School, Spain

Manpreet Hora, Associate Professor, Georgia Institute of Technology, United States

Soumen Ghosh, Professor, Georgia Institute of Technology, United States

Wednesday, 08:00 AM - 09:30 AM

We focus on buyer firms as sources of technological knowledge for suppliers and examine the conditions under which the suppliers accumulate technological knowledge from their buyers and utilize it for their innovation.

115-0836 Patent Pendency and Future Innovative Activities

Param Pal Singh Chhabra, Assistant Professor, University of Alberta, Canada
Manpreet Hora, Associate Professor, Georgia Institute of Technology, United States
Karthik Ramachandran, Professor, Georgia Institute of Technology, United States

We develop an inventor's resource allocation model to allocate her effort between innovative and routine activities with belief updating about the probability of patent pendency. We find support for our hypotheses, motivated by the analytical results and tested using the USPTO data, that patent pendency negatively affects the inventor's decisions.

115-1300 Changing course: How do analogies direct pivots?

Jeremy Hutchison-Krupat, Associate Professor, University of Cambridge, United Kingdom
Panos Markou, Assistant Professor, Darden School of Business, United States

We analyze how analogies across contexts affect the likelihood that people will pivot strategies while searching in an uncertain domain, and how this depends on the distance between the analogies. We devise an experiment and we also explore the differing roles of surface and structural analogies.

115-1440 The Effect of Voting Structure on New Product Evaluation Decisions: Advisory Committees at the FDA

Panos Markou, Assistant Professor, Darden School of Business, United States
Tian Chan, Assistant Professor, Emory University, United States

How do voting schemes shape the discussion, vote conformity, and decision quality of an expert group? Leveraging a change in the US FDA Advisory Committees' way of evaluating new drugs and devices, we show that: simultaneous (viz-a-viz sequential) voting results in increased discussion breadth, reduced voting conformity, and improved decisions.

Invited Session

318	Wednesday, 08:00 AM - 09:30 AM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Panel: Leveraging Human Capital in the Pursuit of Operational Excellence	
	Chair(s): Fabrizio Salvador	

115-1899 Panel: Leveraging Human Capital in the Pursuit of Operational Excellence

Fabrizio Salvador, Professor, IE Business School, Spain
Sriram Narayanan, Professor, Michigan State University, United States
Rachna Shah, Professor, University of Minnesota, United States

This panel brings together top OM scholars to discuss upcoming challenges to leverage human capital in the pursuit of operational excellence such as (1) digitalization of repetitive and semi-repetitive work, (2) new generations balancing between work and life, and (3) slowing natality rates and retirement putting pressure on job markets.

Invited Session

319	Wednesday, 08:00 AM - 09:30 AM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Platform and Omnichannel Strategies	
	Chair(s): Jiong Sun	

115-0062 Platform's information sharing strategy in a supplier encroachment context with scale economies

Pengwen Hou, Student, Tianjin University, China
Hubert Pun, Associate Professor, University of Western Ontario, Canada
Jun Wang, Professor, Tianjin university of finance and economy, China

A manufacturer outsources to an encroaching supplier; the production cost can benefit from economies of scale. Both firms sell through a common online platform; the platform has market information and decides to share information privately with the supplier.

115-1402 Omnichannel Retail and Product Return

Chenchen Di, Student, The Chinese Univ of Hong Kong, Shenzhen, China
Mengzhou Zhuang, Assistant Professor, University of Hong Kong, China

Brick-a-mortar stores have showrooming effect and offers product information to consumers and also make it convenient for consumers to return the product. Due to this trade-off, we interestingly show that the store opening does not significantly increase sales but significantly increase effective sales (sales net return).

115-1443 Search in Omnichannel Operations via Information Design

Ailing XU, Student, HKUST, China
Qiaochu He, Associate Professor, Southern University of Sci and Tech, China
Ying-Ju Chen, Professor, Hong Kong University of Science and Technology, Hong Kong, China

This paper examines how firms manage consumer search and purchase behaviors in omnichannel operations via information design. We propose a sequential search model, where consumers are allowed to search either channel or both and purchase. We find that the optimal information policy takes a two- or three-interval form.

Wednesday, 08:00 AM - 09:30 AM

115-1824 Analysis of buy online return in-store strategy with price competition

Guiyang Zhu, Post Doc/Researcher, National University of Singapore, China

Mabel C. Chou, Associate Professor, National University of Singapore, Singapore

Motivated by the recent collaboration between Kohl's and Amazon (an e-tailer) to allow consumers to buy online and return in store (i.e., BORS), we consider two competing retailers' profit functions with and without BORS and study how BORS adoption changes consumer behavior, hence market division and the number of returns.

115-2049 Optimal content growth and monetization in online platform

Ruibing Wang, Post Doc/Researcher, Universitat Mannheim, Germany

Yonghua Ji, Associate Professor, University of Alberta, Canada

Online platforms are becoming a popular place for viewers to watch movies and TV shows. This paper studies how an online platform can optimize the content growth and revenue management decisions (advertisement vs membership) simultaneously in order to maximize its profit.

Invited Session

320	Wednesday, 08:00 AM - 09:30 AM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Platform and Marketplace Operations	
	Chair(s): Jaelynn Oh	

115-0468 Matching Technology and Competition in Ride-hailing Marketplaces

Kaitlin Daniels, Assistant Professor, Washington University St Louis, United States

Danko Turcic, Associate Professor, Anderson School of Management, United States

The matching technology used by taxis influences their ability to compete with Uber. Via a novel characterization of street-hailing's wait distribution, we show street-hailing may be preferred over centralized dispatch by certain passenger types. We describe conditions under which centralizing taxi dispatch causes taxis to lose market share.

115-0665 Is Token Airdrop Effective in User Retention for Decentralized Exchanges?

Jian Li, Student, Xi'an Jiaotong University, China

Xinyu Zang, Student, University of Florida, United States

Xiang(Shawn) Wan, Assistant Professor, Santa Clara University, United States

Kenny Cheng, Professor, University of Florida, United States

Xi Zhao, Professor, Xi'an Jiaotong University, China

The prosperity of cryptoeconomics in recent years inspires the needs for reliable crypto exchange platforms. However, retaining and promoting user participation remains an immediate problem. In this study, we explore the effectiveness of token airdrop in promoting user participation on the decentralized exchange platform.

115-0892 Top or regular influencer? Contracting in live-streaming platform selling

Anyan Qi, Assistant Professor, University of Texas Dallas, United States

Suresh Sethi, Professor, University of Texas Dallas, United States

Liqun Wei, Assistant Professor, Central South University, China

Jianxiong Zhang, Professor, Tianjin University, China

We analyze the contracting problem of a manufacturer who sells a product through an influencer on a live-streaming shopping platform. We derive the equilibrium contract terms and propose new contracts to improve the efficiency.

115-1054 Restaurant Delivery Platforms: Food Revenue Sharing with Delivery Cost Splitting

Jaelynn Oh, Assistant Professor, University of Utah, United States

Chloe Glaeser, Assistant Professor, Kenan-Flagler Business School, United States

Xuanming Su, Professor, University of Pennsylvania, United States

We study a contract between a food delivery platform and restaurants where the commission rate depends on the delivery distance. We find that a contract that not only shares the food revenue but also splits the delivery profit can coordinate the system.

Invited Session

321	Wednesday, 08:00 AM - 09:30 AM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Tutorial: Structural Estimation in Operations Management	
	Chair(s): Jong Myeong Lim	

115-2105 A Tutorial on Structural Estimation in Operations Management

Jong Myeong Lim, Post Doc/Researcher, Tuck School of Business, United States

Park Sinchaisri, Assistant Professor, University of California Berkeley, United States

Yannis Stamatopoulos, Assistant Professor, The University of Texas at Austin, United States

Dayton Steele, Professor, University of Minnesota, United States

In this tutorial session, Dayton Steele (University of Minnesota), Yannis Stamatopoulos (UT Austin), Park Sinchaisri (UC Berkeley), and Jong Myeong Lim (Dartmouth) discuss various ways in which structural estimation methods are used in OM research. The session focuses on the estimation techniques, rather than the application context or the results.

Contributed Session

322

Wednesday, 08:00 AM - 09:30 AM, Regency Ballroom Q

Track: Revenue Management and Pricing

Contributed Session: **Methodological Advances in Revenue Management and Pricing**

Chair(s): Zexing Xu Junyu Cao

115-0057 Personalized dynamic promotional pricing: A reinforcement learning approach

Junyi DONG, Student, City University of Hong Kong, China

Minkyu SHIN, Associate Professor, City University of Hong Kong, South Korea

Yanzhi Li, Professor, City University of Hong Kong, Hong Kong, China

We develop a model-free offline reinforcement learning approach to designing personalized promotional pricing from observable data. The experimental results with both synthetic and real data demonstrate the superior performance of the approach over existing benchmarks.

115-0362 Online Learning and Pricing for Multiple Products with Reference Price Effects

Sheng Ji, Student, Zhejiang University, China

Cong Shi, Associate Professor, University of Michigan - Ann Arbor, United States

Yi Yang, Professor, Zhejiang University, China

We consider the dynamic pricing problem for multiple products with unknown demand function. Customer demand is sensitive to the price and the reference price which is formed from comparison among the prices of all products. We propose a dynamic learning-and-pricing algorithm and prove the asymptotical optimality of theoretical performance.

115-1734 Few-Shot Sales Prediction with Proxy Data: A Meta Learning Approach

Zexing Xu, Student, University of Illinois at Urbana Champaign, United States

Linjun Zhang, Assistant Professor, Rutgers University, United States

Xin Chen, Professor, Georgia Institute of Technology, United States

We study the problem of demand forecasting for products based on historical data with limited price dispersion and features. To address this, we leverage related information as proxy data and propose an adaptable learner with data-specific parameters. The experiment results show an improvement over the several baselines.

115-1751 Dynamic film timetabling with demand learning

Junyu Cao, Assistant Professor, University of Texas Austin, United States

Yongchang Fu, Student, Zhejiang University, China

Long He, Assistant Professor, National University of Singapore, Singapore

Weihua Zhou, Professor, Zhejiang University, China

We regard the movie timetabling problem as an dynamic assortment problem where the products are available screening times, and movie-goers selects the time according to MNL model. Our work contribute to the literature by involving incompatible constraints since the screen will be occupied until the end of the current show.

Invited Session

323

Wednesday, 08:00 AM - 09:30 AM, Regency Ballroom O

Track: Retail Operations

Invited Session: **Digital markets**

Chair(s): Tianxin Zou

115-0485 Probabilistic Services in Ride-hailing Platform

Di Wu, Student, Xi'an Jiaotong University, China

Gang Li, Professor, Xi'an Jiaotong University, China

Xiajun Pan, Associate Professor, University of Florida, United States

This paper studies two types of probabilistic service in a ride-hailing platform providing high- and low-type services: probabilistic pricing and probabilistic allocation. Remarkably, providing probabilistic service can be a win-win-win policy for riders, drivers, and the platform.

115-0491 Personalized Pricing and Signaling Quality

Guangzhi Chen, Student, Warrington College of Business, United States

Tianxin Zou, Assistant Professor, Warrington College of Business, United States

We study the market effects of a firm's personalized pricing (PP) capabilities when some consumers are uncertain about the firm's product quality. We find that PP capabilities can weaken a high-quality firm's ability of signaling its quality with its price, which may lower its profit but raise consumer surplus.

115-1943 Platform's Private Label and Information Sharing Strategy with Search Neutrality

Jianghua Wu, Professor, Renmin University of China, China

Jiahao Yu, Student, Renmin University of China, China

We build a supply chain where upstream supplier and downstream e-commerce platform can predict demand potential. The platform may develop its private label product to encroach the market while increasing its exposure by recommend system. We study the interaction between platform's encroachment strategy and two players' information sharing strategy.

Wednesday, 08:00 AM - 09:30 AM

Invited Session

324	Wednesday, 08:00 AM - 09:30 AM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Tutorial: AI in OM and SCM	
	Chair(s): Meng Li	

115-2136 Tutorial: AI in OM and SCM

Meng Li, Associate Professor, University of Houston, United States

Artificial intelligence (AI) has a significant impact on the operating processes of numerous companies as well as on our daily lifestyle. Spurred by the increasing availability of data, the rapid development of learning algorithms, and new optimization methodologies, an increasing number of researchers are focusing on and studying the impact of AI on the nature of operations. In this tutorial, I discuss and develop a framework for AI and review the literature in the interface of AI and operations management. I will also introduce and discuss the implementation of AI in the industry based on my industrial collaboration. Further, I identify and highlight several future research directions regarding AI from the operations perspective.

Contributed Session

325	Wednesday, 08:00 AM - 09:30 AM, Silver Spring 1	Track: Data Science and Analytics
	Contributed Session: Analytics for Social Media and Marketing	
	Chair(s): Ali Tosyali	

115-0060 Virality of Malicious Content on Social Media

Saurav Chakraborty, Assistant Professor, University of Louisville, United States

Sandeep Goyal, Associate Professor, University of Louisville, United States

We use machine learning to identify and investigate key characteristics of malicious actors on social media platforms. Using these characteristics, we investigate the composition of different malicious campaigns designed to hamper business operations all over the world by applying a combination of clustering algorithms.

115-0304 Detecting fake review buyers using network structure: Direct evidence from Amazon

Ali Tosyali, Assistant Professor, Rochester Institute of Technology, United States

We use novel data in which we directly observe which products buy fake reviews and study how to identify them. We show that products buying fake reviews are highly clustered in the product-reviewer network due to their reliance on common reviewers. This allows us to detect them with high accuracy.

115-0737 Sequential Pattern Analysis in Loyalty Programs

Jin Fang, Assistant Professor, Clark University, United States

Hanxi Sun, Algorithm Developer, Hudson River Trading, United States

Junhee Kim, Assistant Professor, California State University Stanislaus, United States

This paper presents a network-based model for the sequential purchasing behavior analysis and brand prioritization problem. Our model can capture significant temporal structures and bring meaningful clustering solutions for customers' sequential purchasing paths. We also prioritize brands through a weighted hyperlink-induced topic search (HITS) algorithm to identify star brands.

115-1316 Humans, AI Agents, and Reputational Considerations: Reciprocity to Kind & Unkind Actions

Akshat Lakhiwal, Student, Indiana State University, United States

Hillol Bala, Associate Professor, Indiana University Bloomington, United States

Chewei Liu, Assistant Professor, Kelley School of Business, United States

Do users respond symmetrically to rewards, i.e., positive reciprocity, and punishments, i.e., negative reciprocity made by AI agents? A two-stage game revealed that without reputational consideration, AI agents weakened positive and negative reciprocity, being asymmetric for chatbots but not digital humans. However, with reputational consideration, only positive reciprocity weakened.

Contributed Session

326	Wednesday, 08:00 AM - 09:30 AM, Silver Spring 2	Track: Inventory and Logistics Management
	Contributed Session: Order Fulfilment in E-Commerce and Omni-Channel Systems	
	Chair(s): Imen Ben Mohamed	

115-0803 Dedicated or Shared: How do Third-Party E-commerce Warehouses choose ?

Benedict Jun Ma, Student, The University of Hong Kong, Hong Kong, China

Yong-Hong Kuo, Assistant Professor, The University of Hong Kong, Hong Kong, China

Online retailers seek to outsource order fulfillment services to third-party e-commerce warehouses (3PEW) that are equipped with automation. A higher degree of automation provides consumers with better services, while retailers price higher to make up costs. We aim to study the 3PEW's choices in warehousing modes and contracts.

115-1280 Green order and preparation flexibility in omnichannel retailing

Imen Ben Mohamed, Assistant Professor, EM-Lyon, France

Yann Bouchery, Associate Professor, Kedge Business School, France

Wednesday, 08:00 AM - 09:30 AM

Walid Klibi, Professor, Kedge Business School, France

This paper studies the preparation flexibility and its impact on order fulfillment when a retailer offering a green order delivery. Our model assesses the uncertain remaining preparation capacity per time period and the trucks residual capacities to consolidate uncertain green orders shipment with the stores' replenishment without deteriorating response time.

115-1878 Optimizing Fulfillment and Replenishment Decisions with Order Postponement in Omnichannel Supply Chains

Bartu Arslan, Student, Eindhoven University of Technology, Netherlands

Zumbul Atan, Associate Professor, Eindhoven University of Technology, Netherlands

Albert Schrottenboer, Assistant Professor, Eindhoven University of Technology, Netherlands

We consider a single item single retail store with offline and online channels. Offline customers are lost upon stock-outs and online customer orders can be postponed to a replenishment period. We jointly optimize fulfillment and replenishment decisions. We model the problem as a Markov Decision Process to minimize total costs.

115-2093 Scenario-based Distributionally Robust Optimization for the Stochastic Inventory Routing Problem

Yong-Hong Kuo, Assistant Professor, The University of Hong Kong, Hong Kong, China

Runjie Li, Student, Hong Kong University of Science and Technology, Hong Kong, China

Zheng Cui, Assistant Professor, Zhejiang University, China

Lianmin Zhang, Associate Professor, Shenzhen Research Institute of Big Data, China

We consider a class of the inventory routing problem in a discrete and finite time horizon, where the demand for homogeneous products at retail stores is uncertain and varies across different scenarios. We propose a scenario-based distributionally robust optimization framework to tackle this problem.

Invited Session

327	Wednesday, 08:00 AM - 09:30 AM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Innovation in Pharmaceutical Industry	
	Chair(s): Ivan Lugovoi	

115-0195 Behavioral Aspects in the Design of Procurement Auctions

Ivan Lugovoi, Assistant Professor, Kühne Logistics University, Germany

Jurgen Mihm, Professor, INSEAD, France

Practical experience and academic research have shown that the design of a tender may have a substantial impact on its outcome. We conduct an empirical investigation of large-scale tenders of pharmaceutical products performed by German health insurance companies in order to study which tender designs influence the number of participants.

115-1119 Breadth and depth of supply base innovativeness and its consequences on the focal firm's innovation

Shubham Singh, Student, Indian Institute of Management Bangalore, India

Anirban Adhikary, Assistant Professor, IIM Udaipur, India

Ravi Srinivasan, Associate Professor, Loyola University Maryland, United States

Krishna Sundar Diatha, Professor, Indian Institute of Management Bangalore, India

Firms increasingly seek novel inventions from their supply base. Using data from 1142 manufacturing firms and their 5800 suppliers, we investigate the effect of breadth and depth of supply base innovativeness on focal firm performance. We also investigate the moderating role of supply-base characteristics on relationships using panel data analysis.

115-1684 Pharmaceutical-CRO Relationships: Are Strategic Partnerships the Way Forward?

Lidia Betcheva, Student, University of Cambridge, United Kingdom

Feryal ERHUN, Professor, Cambridge University, United Kingdom

Nektarios Oraopoulos, Lecturer, Cambridge University, United Kingdom

In order to conduct clinical development in a more cost- and time-efficient manner, pharmaceutical companies have largely outsourced development to contract research organizations (CROs). To offer an analytical perspective on how pharmaceutical managers' choice of outsourcing relationship type can affect timelines, we investigate strategic partnerships and transactional arrangements.

115-1775 Product Recalls, Past Innovations, and R&D Intensity

Ujjal Mukherjee, Associate Professor, University of Illinois Urbana-Champaign, United States

Gopesh Anand, Professor, University of Illinois Urbana-Champaign, United States

We investigate: (1) do firms' recalls intensify subsequent R&D efforts, and (2) do firms' past innovation efforts and stocks of innovation outcomes accentuate the intensification of subsequent R&D efforts? We show that firms systematically exhibit divergent innovation behavior.

Invited Session

328	Wednesday, 08:00 AM - 09:30 AM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Market Considerations in Socially Responsible Operations	
	Chair(s): Iva Rashkova	

115-0869 Improving Cash-constrained Smallholder Farmers' Revenue: The Role of Government Loans

Kenneth Pay, Student, Massachusetts Institute of Technology, Singapore

Somya Singhvi, Assistant Professor, University of Southern California, United States

Wednesday, 08:00 AM - 09:30 AM

Yanchong Zheng, Professor, Massachusetts Institute of Technology, United States

The need for immediate cash inhibits smallholder farmers from maximizing their revenue by forcing them to sell their produce at suboptimal times. This paper develops a model to examine how cash constraints influence farmers' selling decisions, as well as to analyze the efficacy of loan programs in improving revenue outcomes.

115-0916 Manufacturer's Intervention into Secondary Market: Implications for Firm's Pricing, Refurbishing Quality, Profit and Consumer Welfare

Hailong Cui, Assistant Professor, University of Minnesota, United States

Greys Susic, Professor, Marshall School of Business, United States

We utilize an analytical model to study the manufacturer's trade-in programs. We focus on the firm's two operational levers, decisions on pricing and quality of refurbishing, and show that for most products it is optimal for the manufacturer to partially intervene into the secondary market.

115-1080 Government Policies to Incentivize Citizen Preparedness for Supply Disruptions

Xiaoyan Zhao, Student, City University of Hong Kong, Hong Kong, China

Venus Lo, Assistant Professor, City University of Hong Kong, Hong Kong, China

Stephen Shum, Professor, City University of Hong Kong, Hong Kong, China

Governments can minimize impact of supply disruptions by subsidizing production of spare supplies during regular times or reducing citizens' cost of pre-purchasing necessities. These policies are effective under different circumstances. We present an algorithm for an approximately-optimal mixed policy, which can reduce social loss significantly compared to a single-focus policy.

115-1278 Sustainable or Not? Role of Valuation Heterogeneity and Uncertainty on Product Line Design

Iva Rashkova, Assistant Professor, Washington University, United States

Lingxiu Dong, Professor, Olin Business School, Washington University, United States

Aaron (Yunzhe) Qiu, Assistant Professor, Peking University, China

We consider a firm developing and selling products with both traditional and sustainable quality to a heterogeneous market. We characterize the rich set of the firm's viable strategies for offering such two-dimensional quality products. We explore the effect of the sustainable valuation heterogeneity and uncertainty on the product line.

331

Wednesday, 09:45 AM - 11:15 AM, Celebration 1

Track: Agriculture and Food Supply Chains

Contributed Session: **Innovative Approaches in Farming**

Chair(s): Yasel Costa

115-0054 Understanding fresh potato ecosystems in Peru. Opportunities & challenges in the post-pandemic era.

Mario Chong, Professor, Universidad del Pacifico, Brazil

Ana Luna, Professor, Universidad del Pacifico, Brazil

Diana Llanos, Assistant Professor, Universidad del Pacifico, Peru

Paolo Lopez, Assistant Professor, Universidad del Pacifico, Peru

Celfia Obregon, Director CITE Papa, CITE Papa, Peru

The COVID-19 pandemic increases communities' vulnerability, mainly among micro and small farmers worldwide. This research focuses on the loss and waste in Peru's fresh potato supply chain, explores their actors and flows; and proposes a packaging solution, considering variables such as shelf life, gas level, absorbance, irradiance, cost, and revenue

115-0167 Compromise programming for scheduling upstream operations in sugarcane supply chains

Yasel Costa, Professor, Zaragoza Logistics Center (ESG50985993), Spain

Marcela Morales Chavez, Assistant Professor, Universidad Libre Seccional Pereira, Colombia

William Sarache, Professor, Universidad Nacional De Colombia, Colombia

Upstream operations in the sugarcane supply chain require synchronized scheduling of crop growth, harvesting activities and transportation to mills. To this end, this study proposes multi-objective stochastic optimization model that considers sustainable goals. Computational results show that it is possible to find a suitable balance between mechanical and manual harvesting.

115-1385 Profit-Making or Profit-Sharing? The Implication of Quality Testing in Milk Supply Chain

Samir Biswas, Student, Indian Institute of Management Calcutta, India

Preetam Basu, Senior Lecturer, Kent Business School, United Kingdom

Balram Avittathur, Professor, Indian Institute of Management Calcutta, India

Milk adulteration is a serious concern affecting public health. Farmers resort to adulteration to increase the perceived quality of milk. This paper compares two milk supply chain models, profit making vs profit sharing, and analyses the impact of quality testing to ensure high-quality milk from the farmers.

115-1806 Value chain mapping: the case of yerba mate in South America

Eduardo Contani, Professor, Londrina State University, Brazil

Vera Sugihiro, Professor, state university of Londrina (UEL), Brazil

Saulo Amâncio-Vieira, Professor, Londrina State University, Brazil

Daniela Mayumi, Student, State University of Londrina, Brazil

André Bertolino, Professor, Federal Institute of Parana, Brazil

We examine the production and processing of yerba mate in South America. The traditional production and trade of yerba mate has evolved in recent years to include more processing techniques as well as how to expand yerba mate applications and potential opportunities for further sustainable value chain.

Invited Session

332

Wednesday, 09:45 AM - 11:15 AM, Celebration 2

Track: Energy and Natural Resource Management

Invited Session: **Emerging topics in renewable energy and electric vehicles**

Chair(s): Sebastian Souyris

115-0188 Evaluating Utility Investments in Renewable Energy with Uncertain Carbon Costs

Tom Palley, Student, Kelley School of Business, United States

Asa Palley, Assistant Professor, Kelley School of Business, United States

We develop a model based on analysis of a well-established integrated assessment model to study how evolving information about SCC affects a policymaker's decision to set a carbon tax and a representative utility's subsequent investments in renewable energy capacity.

115-0333 Utilities' Managed Home-Charging Programs for Electric Vehicles

Ali Fattahi, Assistant Professor, Johns Hopkins University, United States

Utilities have designed managed home-charging programs to control the charging times of electric vehicles (EVs). These programs are either active (utility directly manages the EV charging) or passive (utility indirectly influences the charging times by offering different prices). We study jointly designing and executing these programs.

115-0610 Diffusion of Residential Solar Power Systems: A Dynamic Discrete Choice Approach

Sebastian Souyris, Assistant Professor, Rensselaer Polytechnic Institute, United States

Jun Duan, Associate Professor, University of Texas Austin, United States

Anantaram Balakrishnan, Professor, University of Texas Austin, United States

Varun Rai, Associate Professor, University of Texas Austin, United States

Wednesday, 09:45 AM - 11:15 AM

We study the diffusion of solar photovoltaic systems by modeling the adoption decisions of forward-looking households. The space-time dynamics reveal a clear pattern that the adopters influence a household's adoption decision in their neighborhood. Furthermore, counterfactual analysis generates insights into what incentive programs are more effective in accelerating the diffusion.

115-0613 Virtual Microgrids: Peer-to-peer Trading of Renewable Energy

Sleulchan Lee, Assistant Professor, Michigan Technological University, United States
Alexandar Angelus, Assistant Professor, Texas A&M University College Station, United States
Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

A virtual microgrid refers to a decentralized network of electricity prosumers (i.e., consumers with proprietary generation sources) organized for the peer-to-peer trading of electricity. In this paper, we derive the optimal level of generation capacity investment in a virtual microgrid and compare its cost performance to other centralized microgrid systems.

Invited Session

333	Wednesday, 09:45 AM - 11:15 AM, Celebration 3	Track: Healthcare Operations Management
	Invited Session: Analytics for Efficient Healthcare Operations	
	Chair(s): Mehmet Ayyaci Mehmet Eren Ahsen	

115-1571 Centralized versus Decentralized Patients' Treatment: Which Is Better? Differential Games Analysis of COVID-19 Medical Services

Dehai Liu, Professor, Dongbei University of Finance and Economics, China
Li tianjiao, Student, Temple University, United States

Centralized and decentralized treatments are the main methods of the COVID-19 control. Centralized treatment in designated hospitals is better in large-scaled patients' treatment, but it is easy to cause patients gathering and severe hospital beds shortage. Decentralized treatment can divide patients rationally into square-cabin hospitals and designated hospitals.

115-1597 Pooled Testing in the Presence of Congestion

Bingnan Lu, Post Doc/Researcher, National University of Singapore, Singapore
Saif Benjaafar, Professor, University of Minnesota, United States
Benjamin Legros, Associate Professor, EM Normandie, France
Oualid Jouini, Professor, Université Paris-Saclay, CentraleSupélec, France

We investigate the optimal batch size for a testing facility that diagnoses infected individuals with pooled testing to minimize total waiting time for results. We provide conditions for system stability and develop an algorithm to obtain the batch size for minimizing test result delays.

115-1609 Will Machines Take Over? Algorithms for Human-Machine Collaborative Decision Making in Healthcare

Mehmet Ayyaci, Associate Professor, University of Texas Dallas, United States
Radha Mookerjee, Assistant Professor, University of Texas Dallas, United States
Mehmet Eren Ahsen, Assistant Professor, University of Illinois at Urbana-Champaign, United States

We study a healthcare system's problem of when, if, and how to use human-machine collaborative decision-making in the context of mammography imaging. We propose an optimization model for the healthcare system that minimizes costs related to mammography screening. We apply our model in a real word data competition in mammography.

115-1770 Mitigating the Socio-economic, Demographic and Clinical Diversity Driven Spatial Disparity of COVID-19 Mortality

Bhupinder Juneja, Senior Lecturer, University of Minnesota, United States
Ujjal Mukherjee, Associate Professor, University of Illinois Urbana-Champaign, United States
Kingshuk Sinha, Professor, University of Minnesota, United States

A widespread spatial disparity of mortality from the COVID-19 exists. The spatial disparity in mortality is associated with socio-economic, demographic, and clinical diversity of populations. We demonstrate that policy decisions for critical care and vaccines allocation that account for risk factors can mitigate disparity in mortality.

Contributed Session

334	Wednesday, 09:45 AM - 11:15 AM, Celebration 4	Track: Healthcare Operations Management
	Contributed Session: Healthcare for Social Good	
	Chair(s): Harwin De Vries	

115-0532 A Field Experiment to Relief Cash Constraints at Community Health Entrepreneurs

Lisanne van Rijn, Student, Erasmus School of Economics, Netherlands
Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands
Luuk Veelenturf, Associate Professor, Rotterdam School of Management, Netherlands

Community health entrepreneurs (CHEs) sell health products in small rural stores, but frequently report stock-outs. We conduct a field experiment in Kenya in collaboration with social enterprise Healthy Entrepreneurs to improve the availability of health products. We test two interventions: a business game and decentralized consignment stock locations.

115-0829 Incentive Schemes for Mobile Outreach Units

Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands
Lotty Duijzer, Lecturer, Erasmus University Rotterdam, Netherlands

Wednesday, 09:45 AM - 11:15 AM

We study incentive schemes for mobile outreach units delivering healthcare in remote areas. Commonly applied schemes disincentivize units working together to improve the allocation of tasks. We propose novel schemes, prove when they are optimal, and numerically assess them in the context of family planning outreach services in LMICs.

115-1087 Treatment Planning of Victims with Heterogeneous Time-sensitivities in Mass Casualty Incidents

Yunting Shi, Student, Shanghai Jiao Tong University, China
Nan Liu, Associate Professor, Boston College, United States
Guohua Wan, Professor, Shanghai Jiao Tong University, China

Mass casualty incidents lead to a sudden jump in patient demand, making it inevitable to ration medical resources. Informed by a unique timestamps dataset collected during a large-scale earthquake, we develop data-driven approaches to plan treatment of victims with heterogeneous time-sensitivities to do the greatest good to the greatest number.

115-1462 Deploying Decision Support Analytics for Healthcare and Criminal Justice Settings

Pengyi Shi, Associate Professor, Purdue University, United States
Xiaoquan Gao, Student, Purdue University, United States
Griffin Carter, Student, Purdue University, United States
Jonathan Helm, Associate Professor, Kelley School of Business, United States

I will discuss two ongoing efforts in deploying predictive and prescriptive analytics to support decision makings. The first one is for resource nurse scheduling and deployment in the largest hospital system in Indiana. The second is to support staffing planning and follow-up treatments for individuals in community corrections.

Invited Session

335	Wednesday, 09:45 AM - 11:15 AM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Dynamic Decision Making in Healthcare	
	Chair(s): Eojin Han	

115-0967 Personalized and Probabilistic Modelling of the Risk of Hospital Admission in an Emergency Department

Siddharth Arora, Lecturer, University of Oxford, United Kingdom
James Taylor, Professor, University of Oxford, United Kingdom

We propose a personalised and probabilistic modelling framework to model remotely the triage category and the risk of hospital admission for patients attending an emergency department during the pandemic. We perform external independent validation and use explainable machine learning to gain insight into the key model predictors.

115-1077 Optimizing Hospital Bed Assignments in Real-Time for a Hospital Command Center

Arlen Dean, Student, University of Michigan, Ann Arbor, United States
Mark Van Oyen, Professor, University of Michigan, United States
Mohammad Zhalechian, Student, University of Michigan - Ann Arbor, United States

We report on our research with a large, highly utilized hospital to coordinate bed assignments. These decisions are complicated by patients' varying care needs and rooms/beds' distinct features. To overcome these challenges, we develop and implement an optimization model that leverages operational practices with real-time patient and system information.

115-1100 Dynamic Capacity Management for Deferred Surgeries

Eojin Han, Assistant Professor, Southern Methodist University, United States
Kartikey Sharma, Post Doc/Researcher, Zuse Institute Berlin, Germany
Omid Nohadani, Director of Data Science and AI, Benefits Science Technologies, United States

Motivated by the widespread deferrals of elective surgeries due to the COVID-19, we study a dynamic surgical capacity management problem. To address uncertainty in surgery demand and patient departure, we develop two solution approaches based on robust and distributionally robust optimization. These methods are demonstrated to provide sizable improvements.

115-1756 Personalized Dynamic Treatment Selection for Type 2 Diabetes

Esmail Keyvanshokoh, Assistant Professor, Texas A&M University, United States

In this presentation, I will present new models and algorithms based on online learning theory with theoretical performance guarantees for optimizing treatment selection for patients with type 2 diabetes.

Invited Session

336	Wednesday, 09:45 AM - 11:15 AM, Celebration 6	Track: Healthcare Analytics
	Invited Session: Operational Failures and Standardization in Healthcare Processes	
	Chair(s): Larry Fredendall	

115-0013 When Is Standardization Most Beneficial for Reducing Medical Errors? The Moderating Role of Operational Failures

Sarah Zheng, Assistant Professor, University of Victoria, Canada
Qi Wang, Student, Xi'an Jiaotong University, China
Anita Carson, Professor, Boston University, United States
Jo Holt, Assistant Professor, Vanderbilt University, United States

This paper investigates how operational failures interact with a commonly implemented program - standardization of processes and equipment -- to impact medical errors using existing survey data from over 50 U.S. hospitals and a second dataset comprised of objective clinical data from over 20,000 ICU patient visits.

115-0368 Do New Partner and Procedure Exposure Influence Operating Room Nurse Turnover?

Jaeyoung Kim, Student, Clemson University, United States
Ahmet Colak, Assistant Professor, Clemson University, United States
Lawrence Fredendall, Professor, Clemson University, United States

Knowledge workers learn from performing new tasks and working with new partners, which may improve operational outcomes. However, a side effect is a more challenging work environment because of the need to process more information (task or social information). We operationalize these variables and examine how they affect nurse turnover.

115-0987 Examining Performance of a Sterile Processing Department

Lawrence Fredendall, Professor, Clemson University, United States
Kevin Taaffe, Associate Professor, Clemson University, United States
Sayed Islam, Student, Clemson University, United States
Gabe Segarra, Post Doc/Researcher, Medical University of South Carolina, United States
Sudeep Hegde, Assistant Professor, Clemson University, United States

The Sterile Processing Department (SPD) of a hospital is an integral part of the internal supply chain for surgical procedures in the operating room. This paper analyzes instrument reprocessing data to examine the effectiveness of one hospital's SPD process and identify areas for flow improvement.

115-1017 Deadline Effect in Stroke Patient Care

Brandon Lee, Assistant Professor, University of Dayton, United States
Seokjun Youn, Assistant Professor, University of Arizona, United States
Lawrence Fredendall, Professor, Clemson University, United States

TPA (Tissue Plasminogen Activator) for stroke patients should be administered within 4.5 hours of symptom onset. The clinicians' time for the administration of TPA depends on how much time is remaining before the 4.5 hours are fully spent (i.e., deadline effect). We examine the circumstances that mitigate such deadline effect.

115-1793 The Impact of Extending Treatment Time in the Emergency Department

Sebastian Alvarez Avendaño, Student, University of Wisconsin-Madison, United States
Amy Cochran, Assistant Professor, University of Wisconsin-Madison, United States
Keith Kocher, Assistant Professor, University of Michigan, United States
Brian Patterson, Assistant Professor, University of Wisconsin-Madison, United States
Gabriel Zayas-Caban, Assistant Professor, University of Wisconsin-Madison, United States

Admission decisions in the Emergency Department (ED) are not always determined by clinical factors. We investigate whether admission decisions could be improved by extending how long a patient is treated. We found that extending ED treatment time may decrease preventable admissions without greatly impacting revisits, readmissions, and waiting times.

Invited Session

337	Wednesday, 09:45 AM - 11:15 AM, Celebration 7	Track: Sustainable Operations Management
	Invited Session: Business and Climate Change	
	Chair(s): Christian Blanco	

115-0518 Empirical Analysis of Firm-level Carbon Reduction Commitments

Donghyun (Daniel) Choi, Student, Georgia Institute of Technology, United States
Abhinav Shubham, Student, Georgia Institute of Technology, United States
Manpreet Hora, Associate Professor, Georgia Institute of Technology, United States

An increasing number of firms are joining Science-Based Target (SBT) initiatives and pledging to set carbon reduction or net-zero targets. We identify the antecedents of setting SBTs. Merging the historical SBTs with firm-level financial and environmental performance data, our findings unravel insights on antecedents and consequences.

115-0607 Analyzing Article 6 of the Paris Agreement: A Model of Trade in Carbon Mitigation Outcomes

Manish Tripathy, Post Doc/Researcher, Sauder School of Business, UBC, Canada
Sanjith Gopalakrishnan, Assistant Professor, McGill University, Canada
Harish Krishnan, Professor, University of British Columbia, Canada

The Paris Agreement's Article 6 allows country A to facilitate carbon emission reduction in country B and claim this reduction in A's (not B's) national emissions. This trade in Internationally Transferred Mitigation Outcomes (ITMOs) is debated and misunderstood. We model ITMOs and analyze their impact on economic output and emissions.

115-0876 Decarbonizing OCP: Towards Industrial Decarbonization via Robust Solar Capacity Expansion

Vasileios Digalakis, Student, Massachusetts Institute of Technology, United States
Dimitris Bertsimas, Professor, MIT Operations Research Center, United States
Ryan Cory-Wright, Assistant Professor, Imperial College London, United Kingdom

Wednesday, 09:45 AM - 11:15 AM

We introduce a machine learning- and robust optimization-based methodology for solar capacity expansion, which we develop in collaboration with OCP, a large fertilizer producer, to guide their \$1Bn investment in solar energy. Our model reduces OCP's carbon emissions by 60% and saves \$2.5Bn in operational costs over 20 years.

115-2103 Constructing energy-efficient railway timetables via a robust mixed integer optimization approach

Shuvomoy Das Gupta, Student, Massachusetts Institute of Technology, United States

We present a data-driven robust mixed integer optimization model to construct energy-efficient railway timetables. We apply our model to the UK Docklands Railway system spanning a full day involving thousands of active trains, and find that our model finds an optimal timetable with a significant reduction in energy consumption.

Contributed Session

338

Wednesday, 09:45 AM - 11:15 AM, Celebration 8

Track: Sustainable Operations Management

Contributed Session: Empirical Research in Sustainable Operations Management

Chair(s): Erin McKie

115-0749 Using Text Analytics to Classify Quantify the Impact of Social Sustainability in Global Supply Chains

Soh Hyun Chu, Student, Ohio State University, United States

Christian Blanco, Assistant Professor, Ohio State University, United States

James Hill, Associate Professor, Ohio State University, United States

This study attempts to identify the most severe social sustainability issues within the global supply chains of publicly traded companies. Analyzing news articles from 1990 to 2020, we gauge the severity of social sustainability issues, using statistical methods to measure the impact of an event on firm value.

115-1501 How do Curbside Feedback Tactics Impact Households' Recycling Performance? Evidence from Community Programs

Erin McKie, Assistant Professor, Ohio State University, United States

Aravind Chandrasekaran, Professor, Ohio State University, United States

Sriram Venkataraman, Associate Professor, University of South Carolina, United States

In this research, we examine the role of two popular feedback mechanisms in correcting households' curbside recycling behaviors. Our analysis leverages econometric methods, and recycling performance data from 25,359 audits across 11,899 households and 15 recycling routes. We discuss the implications of our findings for both research and policy.

115-1656 Supply Chain Relationship Impacts on Firm Environmental ESG Practices

Marcus Bellamy, Assistant Professor, Boston University, United States

Erin McKie, Assistant Professor, Ohio State University, United States

Elliot Bendoly, Professor, Ohio State University, United States

Supply chain relations can play major roles in influencing firms' environmental efforts. We examine how changes in firms' and supply chain members' environmental performance occur over a 10-year period. We discuss implications for firms' engagement and selection criteria and external stakeholders' efforts to manage environmental practices across supply chains.

115-1892 Learning to Reduce Industrial Water Consumption

Amrou Awaysheh, Associate Professor, Indiana University, United States

Sriram Narayanan, Professor, Michigan State University, United States

Brian Jacobs, Professor, Pepperdine University, United States

Using factory-level data from a large multinational manufacturer, we examine the effects of organizational experience on an increasingly critical environmental performance measure, the consumption of water required for manufacturing. We examine several learning effects including own learning, vicarious learning from others, and learning by benchmarking.

Invited Session

339

Wednesday, 09:45 AM - 11:15 AM, Celebration 9

Track: Supply Chain Management

Invited Session: Data-Driven Inventory and Supply Chain Management Models

Chair(s): Shi Chen

115-0360 A Simple Data-Driven Policy for Inventory Systems with Backlogging and Demand Covariates

Jingkai Huang, Student, Zhejiang University, China

Kevin Shang, Professor, Duke University Durham, United States

Yi Yang, Associate Professor, Zhejiang University, China

Weihua Zhou, Professor, Zhejiang University, China

We study a single-stage inventory system in which demand depends on exogenous features in the finite horizon. Lead time is positive and unfilled demands are fully backlogged. We propose an effective data-driven heuristic policy based on feature aggregation and sample average approximation and show its near-optimality.

115-0387 No-Regret Learning in Two-Echelon Inventory Systems: Supply Chain Coordination with Unknown Demand Distribution

Shi Chen, Associate Professor, Michael G. Foster School of Business, United States

Haipeng Luo, Assistant Professor, University of Southern California, United States

Wednesday, 09:45 AM - 11:15 AM

Yingfei Wang, Assistant Professor, University of Washington, United States

Mengxiao Zhang, Student, University of Southern California, United States

We aim at designing online learning algorithms for the supply chain coordination problem with an unknown demand distribution, which brings distinct features as compared to classic online optimization problems. We design algorithms that achieve favorable guarantees for regret and convergence to the optimal inventory decisions in centralized and decentralized settings.

115-0443 Inventory Control and Learning for One-Warehouse Multi-Store System with Censored Demand

Recep Bekci, Student, McGill University, Canada

Mehmet Gumus, Professor, McGill University, Canada

Sentao Miao, Assistant Professor, McGill University, Canada

We study an inventory control problem called One-Warehouse Multi-Store system with unknown demand distribution. This system has a central warehouse that receives initial replenishment and distributes its inventory to multiple stores in each period during a finite horizon. Results show that the proposed algorithms have significant theoretical and empirical performances.

115-1378 A Unified Parsimonious Model for Structural Demand Estimation Accounting for Stockout and Substitution

Yiting Deng, Assistant Professor, University College London, United Kingdom

Yuexing Li, Assistant Professor, Johns Hopkins University, United States

Jeannette Song, Professor, Duke University, United States

We develop a unified parsimonious model for structural estimation of demand parameters in the presence of stockout and non-stationary customer arrivals when the unit of purchase can take any continuous quantity. Our approach yields more accurate demand predictions and much higher profits and consumer surplus than that ignoring stockout.

Contributed Session

340	Wednesday, 09:45 AM - 11:15 AM, Celebration 10	Track: Supply Chain Management
	Contributed Session: Platform and E-commerce	
	Chair(s): Hao Su	

115-0019 Supplier Channel Choice via On-Line Platform

Stephen Gilbert, Professor, McCombs School of Business, United States

Parshuram Hotkar, Assistant Professor, Indian School of Business, India

Chuanjun Liu, Student, Fudan University, China

Several major on-line retail platforms operate both reselling and agency channels. We explore when and why the platform and a supplier would interact via the platform's agency vs. its reselling channel. We consider competition among traditional resellers and the possibility that the platform can reach additional consumers.

115-0112 To encroach on add-on marketplaces or not? Interactions between add-on pricing and distribution channel figuration

Ruiying Yuan, Student, Tianjin University, China

Zhaofang Mao, Professor, Tianjin University, China

Zhe Yang, Student, Tianjin University, China

We build a game-theory model of a manufacturer and a platform, to analyze the platform's incentives to enter an add-on market and its decision on the distribution channel figuration. Interestingly, we identify the condition where the platform still prefers encroaching even if no consumers buy the self-operated add-on (fake move).

115-1167 The Impact of the Rivalry Behaviors among the Vertical Partners on Their E-Commerce Performance

Woohyun Cho, Associate Professor, University of New Orleans, United States

Hao Su, Assistant Professor, University of New Orleans, United States

We examine the impact of the relationship between the individual merchants' make or buy decisions and corresponding reactions of the online marketplace operator (i.e., Amazon.com) on the sales performance. Our study contributes to literature that significantly neglects the role of rivalry behaviors among the vertical partners on related outcomes.

115-2124 The Economics of Bestsellers: Consumer Search, Sales Ranking, and Social Learning

Wentao Lu, Post Doc/Researcher, Carey Business School, United States

Man Yu, Professor, Hong Kong University of Science and Technology, China

Motivated by e-commerce platforms' diverse practices in bestseller information provision, we examine consumers' learning, searching, and purchasing behavior. Our results suggest that the platform may withhold some bestseller information at the cost of consumers.

Invited Session

341	Wednesday, 09:45 AM - 11:15 AM, Celebration 11	Track: Manufacturing Operations
	Invited Session: Disruptive Technologies	
	Chair(s): Haoying Sun Yunke Mai	

115-0367 Is Your Machine Better Than You? You May Never Know.

Francis De Vericourt, Professor, ESMT Berlin, Germany

Huseyin Gurkan, Assistant Professor, ESMT Berlin, Germany

Wednesday, 09:45 AM - 11:15 AM

This paper explores the extent to which a decision maker (DM) supervising a machine to make high-stake decisions can properly assess whether the machine produces better recommendations. To that end, we study a set-up in which a machine performs repeated decision tasks under the DM's supervision.

115-0618 The Impact of Mask Mandate Ban

Qili Wang, Student, University of Florida, United States
Xinzhi Rao, Student, University of Florida, United States
Liangfei Qiu, Associate Professor, University of Florida, United States

In May 2021, the government announced Mask Mandate Ban in school districts. In this paper, we examine the causal effect between Mask Mandate Ban and Covid-19 transmission in public elementary and middle schools. Furthermore, we investigate the effects of moderating factors on the impact of the ban on mask mandates.

115-1227 Tokenomics: Controlling Non-Fungible Token Supply in Play-to-Earn Games

Youngsoo Kim, Assistant Professor, University of Alabama Tuscaloosa, United States
Yunke Mai, Assistant Professor, University of Kentucky, United States

This paper studies the long-run operating policies for a play-to-earn game enabled by the NFT technology. We build a dynamical model to capture the economic system in such a game and utilize control theory to characterize the optimal rationing of in-game token supply to sustain a healthy economy.

115-1972 Intentional Deviation from Prescribed Procedures: A Study of Large-Scale Manufacturing Organisations

Neha Tewari, Student, Cranfield School of Management, United Kingdom
Anurag Tewari, Assistant Professor, University of Washington Bothell, United States

Organizational actors often intentionally drift away or deviate from prescribed procedures. Multiple exogenous and endogenous factors shape the actor's intentionality to drift. We empirically investigate 197 cases of drifted actions from 31 large-scale manufacturing organizations to arrive at an ordered list of dominant factors leading to intentional drift in procedures.

Contributed Session

342	Wednesday, 09:45 AM - 11:15 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Location/Network Design	
	Chair(s): Christopher Zobel	

115-0731 Humanitarian shelter network design and evacuation planning problem: An application to flood preparedness in Haiti

Maedeh Sharbaf, Student, HEC Montréal, Canada
Valérie Bélanger, Associate Professor, HEC Montréal, Canada
Marie-Eve Rancourt, Associate Professor, HEC Montréal, Canada

We present a decision-support tool for flood preparedness developed through a collaboration with the World Bank in Haiti. The shelter network design and evacuation planning problem is formulated as a stochastic bi-level optimization model with time-varying characteristics (e.g., evacuee behavior and disaster propagation) and tested using socio-demographic and GIS data.

115-0995 A Robust Model for the Well Location Problem: applying in The Brazilian Northeast Region's droughts

Dayanna Nunes, Student, INSTITUTO MILITAR DE ENGENHARIA, Brazil
Orivalde Silva Júnior, Assistant Professor, INSTITUTO MILITAR DE ENGENHARIA, Brazil
Renata Bandeira, Assistant Professor, INSTITUTO MILITAR DE ENGENHARIA, Brazil
yesus vieira, Student, INSTITUTO MILITAR DE ENGENHARIA, Brazil

This study propose a robust stochastic model for the location of artesian wells for the relief of drought-affected population, considering demand's uncertainty. The goal is to maximize social benefits, prioritizing the most vulnerable communities through a composite drought risk index, while maximizing the probability of success in water prospecting.

115-1738 Creating Resilient Logistic Networks for Natural Disaster Relief

Andy Arnette, Associate Professor, Virginia Tech, United States
Christopher Zobel, Professor, Virginia Tech, United States
Michael Whitehead, Government Operations & Planning Integration Manager, American Red Cross, United States
Kiatikun Luangkesorn, Volunteer - NHQ/National Planner, American Red Cross, United States

Based on work with the American Red Cross, we discuss an approach for deploying and staging people and supplies for response to a natural disaster. We focus on improving the ability to respond efficiently to deviations from the original plan, based on the disaster's scale and impact on infrastructure.

Contributed Session

343	Wednesday, 09:45 AM - 11:15 AM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Empirical Coordination	
	Chair(s): Sarah Schiffling	

115-0323 Managerial Mindset or Organizational Purpose? Comparing How Non-profit and For-profit Managers Address Societal Ills

Anton Shevchenko, Associate Professor, Concordia University, Canada
Mark Pagell, Professor, University College Dublin, Ireland

Wednesday, 09:45 AM - 11:15 AM

Sara Hajmohammad, Associate Professor, University of Ottawa, Canada

Both for-profit and non-profit organizations may seek to alleviate societal ills. Yet, strategic operations management decisions in these two contexts are often driven by different purposes and have different outcomes. We use vignette-based experiments, to disentangle whether strategic decision-making is shaped by the managerial mindset or the organization's primary purpose.

115-0940 Standards and Cooperation in the Humanitarian Sector: Distributing Food in the Sahel

Félicia SAÏAH, Student, HUMLOG Institute, Finland

Sarah Schiffling, Assistant Professor, HUMLOG Institute, Finland

Diego Vega, Assistant Professor, HUMLOG Institute, Finland

This mixed-methods research explores the impact of standards on cooperation in humanitarian supply chains. Collaboration and cooperation across multiple actors and facilitating factors are discussed in the context of therapeutic food distribution against chronic malnutrition in the Sahel region between 2012 and 2022.

115-1246 Rede Refugia - collaborative service among refugees and humanitarian organizations

Estevão Cristian da Silva Leite, Professor, Universidade Federal do Rio de Janeiro, Brazil

Tharcisio Fontainha, Professor, Federal University of Rio De Janeiro, Brazil

Carla Cipolla, Professor, Federal University of Rio De Janeiro, Brazil

Refugees require various services provided by different stakeholders. Therefore, this research aims to strengthen stakeholders' collaboration in refugee crises. Design Science Research, Systematic Literature Review and Design Thinking are adopted to develop and validate the Rede Refugia, a platform meeting offers and requests that facilitate refugees' reception, protection and integration.

115-1590 Managing Emergency Operations by Public-Private Partnerships: A Pilot Study of Seminole HEART

Yue Ge, Associate Professor, University of Central Florida, United States

Sara Iman, Student, University of Central Florida, United States

Christopher Zobel, Professor, Virginia Tech, United States

Joseph Szmerekovsky, Professor, North Dakota State University, United States

Effective public-private partnerships can play an important role in the timely distribution of relief materials after a disaster. We conducted personal interviews of the Seminole HEART board members to better understand how a community-based partnership has improved the logistics of emergency planning and response with past disasters in Central Florida.

Invited Session

344	Wednesday, 09:45 AM - 11:15 AM, Celebration 14	Track: Service Operations
	Invited Session: Models of Services and Customers	
	Chair(s): Andrew Daw	

115-0351 Optimal Scheduling of Proactive Service with Customer Deterioration and Improvement

Yue Hu, Post Doc/Researcher, University of Chicago, United States

Carri Chan, Professor, Columbia University, United States

Jing Dong, Associate Professor, Columbia University, United States

We consider a multi-class queuing model motivated by healthcare environments, where a moderate-class patient who does not receive treatment may recover or deteriorate to an urgent class. In this setting, we quantify the benefit of proactive care and characterize how moderate and urgent patients should be prioritized for care.

115-1036 Asymmetries of Service: Co-Production and Synchronicity

Andrew Daw, Assistant Professor, Marshall School of Business, United States

Galit Yom-Tov, Assistant Professor, Technion Israel Institute of Technology, Israel

We propose and analyze a stochastic model of service interactions that captures two (a)symmetries between the customer and agent: co-production vs self-production, synchrony vs asynchrony. This model reveals connection to the behavioral operations literature, such as non-monotonic system performance from monotonic agent-load slowdown, yielding insights for decision making and analysis.

115-1705 Data-driven Evaluation of Alternative Sentencing Allocation

Antonio Castellanos, Post Doc/Researcher, Booth School of Business, United States

Pengyi Shi, Associate Professor, Purdue University, United States

Amy Ward, Professor, Booth School of Business, United States

Lynne Mock, Manager, Center for Community Corrections Research, ICJIA, United States

Mary Ann Dyar, Program Director, Adult Redeploy Illinois, ICJIA, United States

Adult Redeploy Illinois (ARI) provides community-based incarceration-diversion programs to reduce recidivism. ARI uses machine-learning based risk assessment to identify individuals who can benefit the most. Leveraging the ARI data, we provide a data-driven framework for modeling the ARI process, showing the tradeoffs among admission policy, program utilization and recidivism.

115-1717 A Queueing-theoretic Framework for Evaluating Disease Transmission Risks in Service Facilities

Kang Kang, Student, University of Minnesota, United States

Sherwin Doroudi, Assistant Professor, University of Minnesota, United States

Mohammad Delasay, Assistant Professor, Stony Brook University, United States

Wednesday, 09:45 AM - 11:15 AM

We propose a metric, system-specific basic reproduction rate, for evaluating disease transmission risk during a pandemic in small-scale settings driven by stochasticity in the arrival and service processes. We derive our metric for various queueing models of service facilities by leveraging a novel queueing-theoretic notion: sojourn time overlaps.

Invited Session

345	Wednesday, 09:45 AM - 11:15 AM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Platform Economy	
	Chair(s): Jingjing Weng	

115-0601 Creator economy: measuring the impact of in-app purchases on multi-sided platforms

Jiayu Fan, Student, Temple University, United States

Subodha Kumar, Professor, Temple University, United States

Many multi-sided platforms (such as TikTok and Instagram) added a new feature, in-app purchases. This integration with eCommerce will change platforms' ecosystem and their strategy on ads price and policy of revenue sharing. My research investigates how the shopping function impacts the creator economy and gives managerial insights.

115-1143 Blockchain adoption in manufacturing supply chain

mahak sharma, Assistant Professor, BIMTECH, India

Karuna Jain, Professor, Indian Institute of Technology Bombay, India

The present work tries to investigate factors that impact blockchain adoption in the manufacturing supply chain in the Indian context. Mixed-method sequential approach is used. DEMATEL analysis highlights that "Lack of reference architecture" and "Lack of technical expertise" lies in the cause group and need immediate attention for timely blockchain-adoption.

115-1257 Strategic Blockchain Adoption with Brand Competition: Impact of Deceptive Counterfeit

Jingjing Weng, Student, Temple University, United States

Subodha Kumar, Professor, Temple University, United States

Counterfeiting is a significant concern for many industries, especially online channels. We investigate the impact of deceptive counterfeit and blockchain adoption on two brand-name companies' prices, demands, and profits. Based on our model, we derive the conditions under which the high-quality brand-name company should adopt blockchain technology.

115-2001 Value of Blockchain And IoT Technologies in Supply Chain of Perishable Goods

Vinaysingh Chawan, Assistant Professor, Indian Institute of Management Indore, India

Prageet Aeron, Assistant Professor, Management Development Institute Gurgaon, India

We consider an IoT enabled supply chain of perishables, where the security and integrity of devices data is ensured via the blockchain. The blockchain further helps in implementing smart contracts. A simulation based model is used to do cost-benefit analysis of these technologies in the supply chain of perishables.

Invited Session

346	Wednesday, 09:45 AM - 11:15 AM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Making an Impact Using Applied OM	
	Chair(s): Chris Parker	

115-0745 Seeing is Trusting? The Effects of Supply Chain Transparency on a Consumer Marketplace

Jane Jiang, Student, University of Maryland - College Park, United States

Wedad Elmaghraby, Professor, Robert H. Smith School of Business, United States

Ken Moon, Assistant Professor, The Wharton School, United States

We study whether the supply chain transparency created by blockchain tracing increases consumer trust on online food marketplaces. We find empirically that in a marketplace where consumer trust is low, products adopted tracing benefit from improved trust. When consumer trust is comparatively higher, supply chain transparency serves to educate consumers.

115-1829 Allocation of institutional donations among humanitarian organizations

Hasti Rahemi, Student, University of Colorado Boulder, United States

David Drake, Assistant Professor, University of Colorado Boulder, United States

Institutional donors employ a variety of allocation criteria to determine how to allocate their funds among humanitarian organizations. In this study, we investigate how and when donors' focus on different allocation criteria incentivizes competing HOs to spend their funds in ways that benefit their beneficiaries in the long run.

115-2069 Vision Zero: Data-Driven Street Safety

Chris Parker, Associate Professor, American University, United States

Karthik Balasubramanian, Assistant Professor, Howard University, United States

Vision Zero (VZ) is a successful European initiative that seeks to bring the number of traffic deaths to zero. Many US cities have nominally adopted VZ but have struggled to meet the goal. We aggregate and analyze both public and private data in Washington DC towards this end.

347

Wednesday, 09:45 AM - 11:15 AM, Coral Spring 2

Track: Global Supply Chain Management

Contributed Session: **Digitalization and supply chain disruption in global context**

Chair(s): Dmitry Ivanov

115-1673 Mapping the Supply Chain: The Automation Challenge

Bart MacCarthy, Professor, University of Nottingham, United Kingdom

Guven Demirel, Associate Professor, Queen Mary University of London, United Kingdom

Many contemporary supply chain challenges require supply system to be mapped. We highlight the significant difficulties in automating the mapping process and discuss emerging solutions to capture and map supply systems for different purposes. In an increasingly data rich world, there are many opportunities to develop the mapping process further.

115-1681 The Digitalization of Supply Chains - The Enabling Technologies

Bart MacCarthy, Professor, University of Nottingham, United Kingdom

Dmitry Ivanov, Associate Professor, Berlin School of Economics and Law, Germany

Digitalization is a powerful megatrend impacting how we collaborate and exchange supply chain information, and how we integrate, manage and control operations. We discuss the enabling technologies including smart factories and warehouses, smart logistics, cloud-based systems, digital platforms, and computational engines powered by Analytics, Data Science and Artificial Intelligence.

115-1733 Shipping Container Imbalance and Supply Chain Disruptions: Lessons from the Pandemic

Sudipendra Nath Roy, Lecturer, University of Saskatchewan, Canada

Fredrik Odegaard, Associate Professor, Ivey Business School, Western University, Canada

Marine containerized transport serves as the backbone of product-based supply chains, and faced an alarming empty container imbalance that aggravated supply chain disruptions caused by the COVID-19 pandemic. By using container volume data, we showed how disrupted container traffic undermined marine goods transport and discussed potential solutions for future disruption.

115-1833 Semi-conductor Chip Planning and Allocation during Supply Chain Disruption Due to Covid Outbreak

Sabitha Devarajulu, Student, IIM Tiruchirappalli, India

Shalini Velappan, Assistant Professor, IIM Tiruchirappalli, India

In our research, we have developed an optimization model to decide the optimal allocation of semi-conductor chips to different vehicle lines. In addition to the optimization model, we conducted sensitivity analysis to analyze the robustness of the existing solution and make purchase and planning decisions.

Invited Session**348**

Wednesday, 09:45 AM - 11:15 AM, Blue Spring 1

Track: Supply Chain Risk Management

Invited Session: **Managing Innovation Risks in Supply Chains**

Chair(s): Ahmet Colak

115-0431 Geopolitical risk and international R&D alliances

Remi Charpin, Assistant Professor, Hec Montreal, Canada

Jake London, Assistant Professor, Loyola University Maryland, United States

Nicolas Vincent, Professor, Hec Montreal, Canada

Current geopolitical tensions incentivize governments to reshape supply innovation networks, which many firms rely on to innovate. This study examines how geopolitical risk influences international R&D alliances and may threaten firms' innovativeness.

115-0439 Labor Coordination and Division: Human Capital Investment in Supply Chains

Ling Cen, Associate Professor, The Chinese University of Hong Kong, Hong Kong, China

Michael Hertz, Professor, Arizona State University, United States

Ziang Wang, Assistant Professor, PolyU, Hong Kong, China

Jing Wu, Associate Professor, The Chinese University of Hong Kong, Hong Kong, China

We document labor coordination and division in recruiting activities of supply-chain partners consistent with relationship-specific investment in human capital. We find that recruitment by dependent suppliers caters to the needs of their major customers. Supply chain partners recruit general positions together, while pursuing labor division for specialized occupations.

115-1380 Understanding the Implications of Operational Flexibility for Electricity Grid Transition to Intermittent Generation

Seyed Amin Seyed Haeri, Student, Clemson University, United States

Ahmet Colak, Assistant Professor, Clemson University, United States

Safak Yucel, Assistant Professor, Georgetown University, United States

In this study we empirically investigate the role of operational flexibility in making a transition from conventional fossil-fueled power plants to intermittent renewable power plants (i.e., solar and wind generators). We utilize two decades worth of data on power plant investments to answer our research questions.

115-1432 Does production location impact quality? An empirical study on the generic drug quality variations

Xinyu Shirley Liang, Student, University of Michigan Ann Arbor, United States

Wednesday, 09:45 AM - 11:15 AM

Jun Li, Associate Professor, University of Michigan - Ann Arbor, United States

In Joon Noh, Assistant Professor, Penn State University, United States

Ravi Anupindi, Professor, University of Michigan Ann Arbor, United States

Nearly 40% of finished generic drugs in the US are manufactured overseas. Limited research has studied their clinical performance due to the opaqueness of the supply chain and limited access to large-scale patient outcomes data. Our study utilizes patient-level claims and drug manufacturing location data to examine the quality variations.

115-1907 Multi-dimensional Aspects of Variety Under Shortages: Evidence from the Automobile Industry

Hojun Choi, Student, Northwestern University, United States

Ahmet Colak, Assistant Professor, Clemson University, United States

Sina Golar, Assistant Professor, Kennesaw State University, United States

Achal Bassamboo, Professor, Northwestern University, United States

Recent studies in inventory management have focused on the impacts of variety on sales performance. However, disruptions such as COVID-19 can impose replenishment constraints, preventing vendors from utilizing the insights gained in these studies. In this paper, we study the multi-dimensional aspects of variety during shortages in the automotive industry.

Invited Session

349

Wednesday, 09:45 AM - 11:15 AM, Blue Spring 2

Track: Supply Chain Risk Management

Invited Session: Stochastic Supply Chain Models

Chair(s): Guiyun Feng

115-0648 Hazardous Materials: An Inventory Model with Risk and Safety Considerations.

Santiago Neira Mendieta, Student, Oklahoma State University, Colombia

Diana Rodriguez-C., Assistant Professor, Oklahoma State University, United States

The main objective is the development of a HAZMAT inventory model with risk and safety considerations, to determine the order quantity and the risk level of the storage conditions considering the HAZMAT regulations, the facility location, the exposed vulnerable population, the presence of fire protection systems, and the incident probability.

115-1137 Asymptotically Optimal Policies for Dynamic Ambulance Dispatch in Emergency Medical Service System

Cheng Hua, Assistant Professor, Shanghai Jiao Tong University, China

Tong Wang, Associate Professor, Shanghai Jiao Tong University, China

Jingwei Zhang, Assistant Professor, The Chinese Univ of Hong Kong, Shenzhen, China

Ziyan Zhou, Student, Shanghai Jiao Tong University, China

We consider a dynamic ambulance dispatch problem in an emergency medical service system, in which a DM dynamically observes call arrivals, then sequentially decides which unit to be dispatched to serve the call. We consider a large penalty for each unserved request, which is rarely considered in the existing papers.

115-1463 Online Two-stage Stochastic Optimization with Applications in Supply Chain

Jiashuo Jiang, Assistant Professor, Hong Kong University of Science and Technology, China

We consider an online two-stage stochastic optimization of a finite horizon of T periods. At each period, we need to first decide a first-stage decision, observe the realized feature afterwards, and then decide the second-stage decisions, to satisfy long-term constraints. We develop new algorithms for various stochastic input.

Invited Session

350

Wednesday, 09:45 AM - 11:15 AM, Rainbow Spring 1

Track: Empirical Research in Operations Management

Invited Session: Empirical Research on Process and Performance Improvement

Chair(s): Jane Iversen

115-0031 Primary Care Access and Preventive Care Performance

Yingchao Lan, Assistant Professor, University of Nebraska Lincoln, United States

Jane Iversen, Student, Ohio State University, United States

Aravind Chandrasekaran, Professor, Ohio State University, United States

Overuse of resource-intensive services in the form of emergency room (ER) visits and underuse of primary care and health screenings contribute to soaring healthcare expenditures in the United States. We study how primary care access through accountable care organizations can impact preventive care performance and clinical outcomes.

115-0422 An Empirical Investigation of Factors Influencing Performance of Decentralized Applications

Luv Sharma, Associate Professor, University of South Carolina, United States

Moonwon Chung, Assistant Professor, Cleveland State University, United States

Jie Lian, Student, University of South Carolina, United States

We identify characteristics of decentralized applications that contribute to market success.

115-0453 Experiential Quality and Information Disparities in Hospital Choice

Ankita Shirahatti, Student, Questrom School of Business, United States

Wednesday, 09:45 AM - 11:15 AM

Anita Carson, Professor, Boston University, United States

Structural barriers to healthcare are a major deterrent for many minority patient groups when seeking inpatient hospital care. In this study, we examine racial disparities in the usefulness of publicly reported experiential quality information in hospital preference for obstetrics patients choosing a hospital to give birth.

115-0507 The Role of Route-Level Decisions in the Efficiency and Resilience of Airline Operations

Vishal Ahuja, Assistant Professor, Cox School of Business, United States

Yasin Alan, Associate Professor, Vanderbilt University, United States

Mazhar Arkan, Associate Professor, University of Kansas, United States

We use a passenger-level dataset and take advantage of a regulatory change to study the role of an airline's route-level decisions in the efficiency and resilience of its operations. Our analysis reveals that both the efficiency and resilience impacts of the regulatory change show wide variations across the airline's network.

Contributed Session

351	Wednesday, 09:45 AM - 11:15 AM, Rainbow Spring 2	Track: Operational Excellence
	Contributed Session: Operational Excellence in fulfilment process design	
	Chair(s): Ravi Srinivasan	

115-0225 The performance effects of holding inventory before and during the Covid-19 pandemic

Oliver von Dzengelevski, Post Doc/Researcher, Eth Zurich, Switzerland

Torbjørn Netland, Assistant Professor, Eth Zurich, Switzerland

Morgan Swink, Professor, Texas Christian University, United States

Stephan Wagner, Professor, ETH Zurich, Switzerland

We engage with the popular claim that companies would have benefitted from keeping additional inventory during the Covid-19 pandemic. Analyzing panel data of 1,003 manufacturers, we find that only companies in industries that gained in sales after the onset of the pandemic would have benefitted from increasing their inventory levels.

115-0723 Circular Economy model for manufacturing business operations

Simon Nadeem, Lecturer, University of Derby, United Kingdom

Jose Arturo Garza-Reyes, Professor, University of Derby, United Kingdom

Piera Centobelli, Assistant Professor, University of Naples Federico II, Italy

Kristina Kim, Marketing Specialist, University of Warwick, Netherlands

JAYAKRISHNA KANDASAMY, Associate Professor, VIT University, India

Circular Economy (CE) adoption is hindered due to a lack of practical guidelines. The presented CE model for the manufacturing sector derives from the existing concept of DMAIC while amalgamating the CE with the long-standing concept of Lean. This makes CE's adoption more desirable and practical for the manufacturing sector.

115-0945 Integrated and Hierarchical Designs for Combined Material and Capacity Control

Arno Kasper, Student, University of Groningen, Netherlands

Stefan Haeussler, Associate Professor, University of Innsbruck, Austria

Martin Land, Associate Professor, University of Groningen, Netherlands

Ruud Teunter, Professor, University of Groningen, Netherlands

This study investigates how to design combined inventory and capacity control for manufacturers that produce customized products. The current literature argues that inventory and capacity control should be organized hierarchically. Using simulation, this study develops and tests a flexible integrated design, which outperforms its hierarchical counterparts.

115-1224 Lean Inventory and Financial Performance: Moderated Mediation Analysis of Production Efficiency and Environmental Munificence

Mamta Sahare, Student, Indian Institute of Management Indore, India

Ravi Srinivasan, Associate Professor, Loyola University Maryland, United States

Saurabh Chandra, Professor, Indian Institute of Management Indore, India

Debasish Maitra, Professor, IIM Indore, India

This work examines how and when lean inventory affects financial performance. The proposed conceptual model is tested using data from Manufacturing industry. This work provides theoretical and practical insights on the lean inventory and the contingency where it is more effective

Invited Session

352	Wednesday, 09:45 AM - 11:15 AM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Platforms and online marketplaces	
	Chair(s): Guangwen Kong	

115-0676 Customer Disclosure as a Signal of Quality

Xin Wang, Assistant Professor, Hong Kong University of Science & Tech, Hong Kong, China

Xin Fang, Assistant Professor, Singapore Management University, Singapore

Xiaofang Wang, Professor, Renmin University of China, China

Yaoyao Yang, Student, Renmin University of China, China

Wednesday, 09:45 AM - 11:15 AM

Many manufacturers not only produce for big firms, but also sell their own brands. Some e-commerce platforms allow a manufacturer to disclose its production for a big firm as a signal of its own brand's quality. We study how such disclosure affects the manufacturer, the big firm, and consumers.

115-0893 Expanding into On-Demand Markets with Airbnb of Warehousing

Soraya Fatehi, Assistant Professor, University of Texas at Dallas, United States

Anyan Qi, Assistant Professor, University of Texas Dallas, United States

Airbnb of warehousing allows a firm to flexibly tap into the excess capacities of independent warehouse providers closer to its markets and offer on-demand fulfillment services to its consumers without significant upfront costs. We study how a firm should utilize Airbnb of warehousing to expand into its on-demand markets.

115-1299 The More the Better? Operations and Incentives of an On-demand Medical Crowdsourcing Platform

Jingxuan Geng, Student, Temple University, United States

Guangwen Kong, Associate Professor, Temple University, United States

Marco Qin, Assistant Professor, Temple University, United States

Online medical crowdsourcing platforms enable patients to seek multiple opinions from doctors. We consider such a medical crowdsourcing platform that designs the optimal price and operational leverages such as a control limit on doctors' entry. We also collect data and empirically validate the results of the analytical model.

115-1786 E-commerce platform and consumer membership system

Jiang Wu, Professor, Southwestern University of Finance and Economics, China

Linxiu Hu, Student, Southwestern University of Finance and Economics, China

Xiuli He, Professor, University of North Carolina Charlotte, United States

With the rise of the sharing economy, more retailers have begun to join the e-commerce platform to expand sales channels. As an important approach to improve consumer retention, the membership system is widely used in major e-commerce platforms.

Invited Session

353	Wednesday, 09:45 AM - 11:15 AM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Intelligent Logistics	
	Chair(s): Wc Benton	

115-0063 On using Progress Updates to Synchronize Component Deliveries for Automotive Assembly Amid Supply Delays

Toyin Clottey, Associate Professor, Iowa State University, United States

Wc Benton, Professor, Ohio State University, United States

COVID-19 and the war in Ukraine have made it necessary for manufacturers to consider innovative approaches to sourcing materials. We assess the value of using delivery progress updates to synchronize component deliveries for an automotive manufacturer who, amid supply delays, maintains a strategy of waiting for all components before assembly.

115-0757 Sustained Learning Under Algorithm-Driven Automation

Christina Imdahl, Assistant Professor, Eindhoven University of Technology, Netherlands

William Schmidt, Assistant Professor, Cornell University, United States

Kai Hoberg, Professor, Kuehne Logistics University, Germany

We demonstrate that an ML classification model can predict when a planner will make value-enhancing adjustments to system recommendations, but its performance weakens over time. Structuring the ML classification threshold as a newsvendor problem balancing the costs and benefits of human reviews, including the value of learning, mitigates this loss.

115-1546 A Combinatorial Auction Mechanism for Truckload Transportation Markets

Mohsen Emadikhavi, Assistant Professor, Florida Atlantic University, United States

Robert Day, Associate Professor, University of Connecticut, United States

We present a combinatorial auction/exchange market for a truckload transportation system where carriers can use a compact bid language to express their preferences to participate in the market. We present a dual-pricing mechanism that finds (epsilon-)competitive equilibrium prices and evaluate market outcomes under consideration of different practical constraints.

115-1814 Quantifying our Perspectives: Semantic Vector Space Models in a Cross-Functional Sourcing Context

Beverly Osborn, Assistant Professor, Indiana University, United States

Miscommunication is persistent when vocabulary is shared but meanings differ. This is particularly important in boundary-spanning functions such as purchasing. I address this by training word2vec models on function-specific text corpora generated by distinct professional associations, and interpreting key differences between models as differences in perspective that can influence sourcing.

Invited Session

354	Wednesday, 09:45 AM - 11:15 AM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Data Driven Operations	
	Chair(s): Nil Karacaoglu Simin Li	

115-0709 Vertical Product Location Effect on Sales: A Field Experiment in Convenient Stores

Wednesday, 09:45 AM - 11:15 AM

Zahra Jalali, Student, McGill University, Canada
Maxime Cohen, Professor, McGill University, Canada
Necati Ertekin, Assistant Professor, University of Minnesota, United States
Mehmet Gumus, Professor, McGill University, Canada

Through a series of three studies in a field experiment conducted at a global convenience store chain over four months, we examine the effect of vertical product location on sales and how this effect changes across various factors. Our findings from the field experiment are used to optimize planograms.

115-1359 Understanding Matching Quality on Freelance Platforms Through Conversational Analytics

Jiannan Xu, Student, University of Maryland, United States
Ashish Kabra, Assistant Professor, University of Maryland, United States
Kunpeng Zhang, Assistant Professor, University of Maryland, United States

We develop a new framework to quantify matching quality on labor marketplaces through state-of-the-art conversational analytics. Using sentiment analysis and topic modeling tools, we uncover the relationship dynamics between clients and freelancers on a freelance platform.

115-1434 The impact of government responsiveness on citizen engagement on public service platforms.

Qihua Gao, Post Doc/Researcher, Massachusetts Institute of Technology, United States
El Ghali Zerhouni, Student, Massachusetts Institute of Technology, United States
Yanchong Zheng, Professor, Massachusetts Institute of Technology, United States

Digital platforms are a new communication channel for governments to solicit citizens' input about public services and improve service quality. How can governments promote citizens' engagement on such platforms? Using panel data from platforms in China and the US, we examine the impact of the government's responsiveness on citizens' engagement.

115-2126 Managing Multihoming Workers in the Gig Economy

Park Sinchaisri, Assistant Professor, University of California Berkeley, United States

Gig economy workers multihome by dynamically allocating their services in real-time between multiple gig platforms. We study gig workers' multihoming decisions by using machine learning methods to estimate a structural model from a ride-hailing firm's proprietary data combined with publicly reported trips data.

Invited Session

355	Wednesday, 09:45 AM - 11:15 AM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Algorithmic Causal Inference and Learning II	
	Chair(s): Dennis Zhang Heng Zhang	

115-0145 Online Learning and Pricing for Service Systems with Reusable Resources

Cong Shi, Associate Professor, University of Michigan - Ann Arbor, United States

We consider a price-based revenue management problem with finite reusable resources over a finite time horizon T . We propose two online learning algorithms, termed Batch Upper Confidence Bound (BUCB) and Batch Thompson Sampling (BTS), and prove that the cumulative regret upper bound is $\tilde{O}(\sqrt{PT})$, which matches the regret lower bound.

115-0471 No-Regret Learning in Multi-Retailer Inventory Control

Xiaoyu Fan, Student, New York University, United States
Boxiao (Beryl) Chen, Associate Professor, University of Illinois at Chicago, United States
Wenqiang Xiao, Professor, New York University, United States
Zhengyuan Zhou, Assistant Professor, New York University, United States

We study both the single-period and infinite-horizon inventory control with multiple retailers and lost-sales. We assume unknown demand distribution and apply stochastic gradient ascent (SGA) to learn the Nash equilibria. We propose sufficient conditions, under which SGA converges to the set of Nash equilibria almost surely and with convergence rate guarantees.

115-0557 Deep Learning Based Casual Inference for Large-Scale Combinatorial Experiments: Theory and Empirical Evidences

Zikun Ye, Student, University of Illinois at Urbana Champaign, United States
Zhiqi Zhang, Student, Washington University in St. Louis, United States
Dennis Zhang, Associate Professor, Washington University in St. Louis, United States
Heng Zhang, Assistant Professor, Arizona State University, United States
Renyu Zhang, Associate Professor, The Chinese University of Hong Kong, China

We develop a novel framework combining deep learning and double machine learning to estimate the causal effect of any treatment combination for each user on the platform when observing only a small subset of treatment combinations. We show the superior performance of our method on a large-scale platform.

115-1306 Experimental Design in Marketplaces: Competition and Interference

Hannah Li, Post Doc/Researcher, Massachusetts Institute of Technology, United States
Ramesh Johari, Professor, Stanford University, United States
Inessa Liskovich, Data Science Manager, Airbnb, United States
Gabriel Weintraub, Professor, Stanford University, United States

Wednesday, 09:45 AM - 11:15 AM

Online platforms often rely on experiments to aid decision-making. However, in the setting of marketplace platforms, prior work shows that treatment effect estimates can be biased due to interference effects. We develop market models to capture market dynamics and investigate the effect of interference on designs and estimators.

115-2111 Policy Learning with Adaptively Collected Data

Ruohan Zhan, Assistant Professor, Hong Kong University of Science and Technology, Hong Kong, China

Zhimei Ren, Post Doc/Researcher, University of Chicago, United States

Susan Athey, Professor, Stanford University, United States

Zhengyuan Zhou, Assistant Professor, New York University, United States

Learning optimal policies from historical data enables personalization in many applications. Our work complements the literature by learning policies with adaptively collected data. We propose an algorithm with proved finite-sample regret bound, which is minimax optimal and meets our established lower bound with prior knowledge on data-collection mechanism.

Invited Session

356	Wednesday, 09:45 AM - 11:15 AM, Regency Ballroom O	Track: Retail Operations
	Invited Session: Emerging Online Retailing Strategy	
	Chair(s): Jiaru Bai Qiang Gao	

115-0176 AI Assistant in Online Pharmacy

Tong Shen, Student, University of Connecticut, United States

Chen Liang, Assistant Professor, University of Connecticut, United States

Jing Peng, Assistant Professor, University of Connecticut, United States

Mengcheng Guan, Post Doc/Researcher, Huazhong University of Science & Technology, China

Jianbin Li, Professor, Huazhong University of Science & Technology, China

AI is increasingly popular in diagnosing diseases and recommending drugs in healthcare platforms. Leveraging the staggered adoption of an AI assistant, we find that this assistant significantly increases users' purchases, even for drugs not recommended by AI; the effect is stronger for inexperienced users and users with higher privacy concerns.

115-0200 Gamified Live-streaming: Is Avatar Better than Human Being?

Yahui Liu, Student, Donghua University, China

Lei Wang, Assistant Professor, Penn State University University Park, United States

Yanwen Wang, Associate Professor, University of British Columbia, Canada

We empirically examine the effect of gamified and human live-streaming on product sales and product return. We find that gamified streamer reduces both product sales and the return rate simultaneously, whereas human streamer boosts both measures. We contribute to the growing literature on the business value of AI and gamification.

115-0775 Regulation on Data-Driven Price Discrimination and Firm Compliance

Shanshan Quan, Student, Zhejiang University, China

Eric Zheng, Professor, University of Texas Dallas, United States

Mingzheng Wang, Professor, Zhejiang University, China

We conduct whether data-driven price discrimination exists and whether regulations banning unlawful DDPD play effects by using a unique natural experiment. We find that customers with more data are subject to higher degrees of price discrimination and though DDPD did not disappear completely, the degree decreased significantly post-regulation.

115-1797 Poverty Alleviation through Livestream Commerce

Luyi Gui, Associate Professor, University of California Irvine, United States

Xi Lin, Student, University of California Irvine, United States

Yixin Lu, Associate Professor, George Washington University, United States

Livestream commerce, as a tool that can enhance reach and information delivery, has been applied to alleviate poverty in rural area. In this paper, we study the interaction and decision making of the farmers, the local government, and the multi-channel network agencies who manage hosts of the livestream sales.

Invited Session

357	Wednesday, 09:45 AM - 11:15 AM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Emerging Technology Management in Healthcare	
	Chair(s): Xianghui (Richard) Peng	

115-0600 Transforming healthcare delivery for deployed operations: Developing the business case for redistributed manufacturing in Healthcare

Victor Uwalaka, Student, University of the West of England, United Kingdom

Wendy Phillips, Professor, University of the West of England, United Kingdom

Christopher Howell, Post Doc/Researcher, University of the West of England, United Kingdom

Basil Omar, Senior Lecturer, University of the West of England, United Kingdom

Wednesday, 09:45 AM - 11:15 AM

This study explores how advanced manufacturing technologies are enabling a move away from large scale centralised production towards small-scale-novel manufacturing close to the point of need, using value stream mapping. Focusing on scale-out as opposed to scale-up, redistributed manufacturing threatens to disrupt existing business models and supply chain configurations.

115-1649 Examining IT Vendor Efficiency on Care Quality Improvement and Patient Experience

Joonghee Lee, Assistant Professor, Appalachian State University, United States

Jianliang Hao, Assistant Professor, California State University, Chico, United States

Most hospitals rely on IT vendors to implement EMRs rather than self-developing, managing the relationship with IT vendors is essential to increase its effectiveness. This study examines the impact of the IT vendor relationship on organizational performance in the hospital setting using a national sample of US hospitals and econometrics.

115-1769 The Impact of Technology Adoption on Hospital Performance

Xianghui (Richard) Peng, Associate Professor, Penn State University Erie, United States

Xinyu Wei, Assistant Professor, California State University, Chico, United States

Heng (John) Xie, Assistant Professor, California State University Sacramento, United States

Rapid technological advancements are providing more opportunities for healthcare organizations to improve their performance. This research investigates the impact of technology adoption and technology integration on hospital performance. A research framework was proposed through the lens of multiple theories. Analysis on sampled hospitals is conducted to examine the proposed framework.

115-1839 How does supply chain digital transformation drive supply chain performance?

Benjamin Agyei-Owusu, Student, Kwame Nkrumah University of Science and Technology, Ghana

David Asamoah, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana

Francis Baidoo, Associate Professor, University of Texas Rio Grande Valley, United States

This study examines how digital transformation of supply chains can enhance the performance of supply chains by highlighting the intervening role of supply chain learning and supply chain value co-creation. The proposed research model is tested using data from firms operating in the health supply chain of a developing country.

Contributed Session

358	Wednesday, 09:45 AM - 11:15 AM, Silver Spring 1	Track: Data Science and Analytics
	Contributed Session: Analytics Applications in Operations Management	
	Chair(s): Omar Mouchtaki	

115-0034 Multi-Task Learning in Predicting Customer Life-Changing Events Based on Individual-Level Financial Transaction Data

Yanhan (Savannah) Tang Tang, Student, Carnegie Mellon University, United States

Predicting customers' unemployment occurrences helps evaluate credit risks and financial opportunities. We develop a novel hierarchical Bayesian model that exploits individual-level financial transaction data. Our proposed method enables learning across related transaction time series and dynamically grouping time series based on similarities and information extracted from transaction descriptions.

115-0908 Drawing Strategic Insights from Patents: A Machine Learning Approach

Tzu-Wen Lin, Student, University of Texas at Arlington, United States

Jayarajan Samuel, Assistant Professor, The University of Texas at Arlington, United States

Sridhar Nerur, Professor, University of Texas Arlington, United States

Strategic planning for firms in knowledge-intensive industries is a little studied area and cannot rely on traditional methods. Using a unique dataset of over 10,000 patent documents, we develop a machine learning approach to this problem and illustrate the viability of our solution for two leading telecommunication firms

115-1053 Quality vs. Quantity of Data in Contextual Decision-Making: Exact Analysis under Newsvendor Loss

Omar Besbes, Professor, Columbia University, United States

Will Ma, Assistant Professor, Columbia University, United States

Omar Mouchtaki, Student, Columbia University, United States

We study a data-driven contextual Newsvendor problem and the performance implications of quality and quantity of data. We characterize exactly the worst-case expected regret for a classical class of kernel policies and unveil new structural insights on the learning behavior of these policies.

115-1592 Data-driven Inference and Optimization for Imputing Non-observable Human Preferences in Staff Scheduling

Jiangxue Han, Student, The University of Hong Kong, Hong Kong, China

Yong-Hong Kuo, Assistant Professor, The University of Hong Kong, Hong Kong, China

We consider model uncertainty, bounded rationality and compromised infeasibility in a multi-objective staff scheduling problem simultaneously. To determine the agent's implicit preferences, a data-driven inverse optimization framework is developed. The agent is given sample schedules to rank and the ranked schedules are fed into the inverse model for inferring weights.

Invited Session

359	Wednesday, 09:45 AM - 11:15 AM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Shipment Consolidation and Order Fulfillment	
	Chair(s): Johan Marklund	

Wednesday, 09:45 AM - 11:15 AM

115-1401 Revenue management for demand fulfillment in make-to-stock production systems

Moritz Fleischmann, Professor, University of Mannheim, Germany

Herbert Meyr, Professor, University of Hohenheim, Germany

Rainer Quante, ---, ---, Austria

Danja R. Sonntag, Associate Professor, Lund University, Sweden

We consider a make-to-stock production system with multiple customer classes. The question is whether to accept, backorder or reject a given order in anticipation of future orders. We characterize the optimal policy that maximizes expected profits and present several heuristics that are computationally tractable for realistic problem sizes.

115-1469 The value of supplier flexibility for single-sourced components in the high-tech industry

Mirjam Meijer, Assistant Professor, Kühne Logistics University, Germany

Ton De Kok, Professor, Eindhoven University of Technology, Netherlands

Willem Van Jaarsveld, Associate Professor, Eindhoven University of Technology, Netherlands

High-tech manufacturers produce multiple generations of end-products containing complex single-sourced components. We investigate the value of having alternative suppliers that the manufacturer could switch to for the next product generation if the current supplier underperforms. We show that the threat of switching incentivizes the current supplier to invest in capacity.

115-1537 Inventory control in OWMR systems with hybrid time and quantity based shipment consolidation

Filip Malmberg, Student, Lund University, Sweden

We provide an exact method to jointly evaluate and optimize inventory and shipment consolidation decisions in a continuous-review one-warehouse-multiple-retailer system with respect to costs and emissions. The warehouse uses a hybrid (time and quantity-based) shipment consolidation policy to replenish retailer groups facing stochastic demand.

115-1683 Evaluation and Control of Inventory Distribution Systems with Quantity Based Shipment Consolidation

Johan Marklund, Professor, Lund University, Sweden

Filip Malmberg, Student, Lund University, Sweden

We present an exact method for evaluation and control of one-warehouse-multiple-retailer distribution systems with quantity based shipment consolidation to groups of retailers facing Poisson demand. The method determines the inventory level distributions for all stock points and minimizes the expected inventory and shipment costs under service and emissions constraints.

Invited Session

360	Wednesday, 09:45 AM - 11:15 AM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Behavior, Incentives and Platform Design	
	Chair(s): Xiaoyang Long	

115-0788 R&D and licensing strategies in the presence of social effects in the consumer market

Weizhe Yang, Student, University of Science and Technology of China, China

Yaozhong Wu, Associate Professor, National University of Singapore, Singapore

In developing new products to the consumer market, firms can choose to purchase licenses of new technologies or to develop on their own. We study firms' R&D and licensing strategies when consumers' purchasing decisions are influenced by social effects.

115-1448 Driver behaviors in crowdshipping: An Income Opportunity Effect perspective

Nicolo Masorgo, Student, University of Arkansas, United States

David Dobrzykowski, Associate Professor, University of Arkansas, United States

Brian Fugate, Associate Professor, University of Arkansas - Fayetteville, United States

Christopher Tang, Professor, University of California Los Angeles, United States

Understanding crowdshipping drivers' behaviors is important to ensure the last mile delivery service. Using an Income Opportunity Effect perspective, this study investigates how monetary incentives and operational characteristics of a delivery task affect pre-during-post task behaviors. Econometrics analyses on a dataset retrieved from a large national retailer present new insights.

115-1703 The Choice Overload Effect in Online Recommender Systems

Xiaoyang Long, Assistant Professor, University of Wisconsin Madison, United States

Jiankun Sun, Assistant Professor, Imperial College London, United Kingdom

Hengchen Dai, Assistant Professor, University of California Los Angeles, United States

Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

Online retailing firms are increasingly relying on recommender systems to help guide consumer choice. In this work, we study how the number of recommended products influences consumers' search and purchase behavior in an online recommender system via a large-scale field experiment.

115-1857 The Dark Side of Service Hierarchy: Evidence from a Natural Experiment

Zhi Cao, Student, University of Electronic Science and Technology of China, China

Meng Li, Associate Professor, University of Houston, United States

Service hierarchy has always been treated as a design to improve service efficiency. In this study, we leverage an exogenous event from a medical Q&A forum and find that the lower-level providers reduce their contributions on the forum after the establishment of the service hierarchy, compared with the higher-level providers.

Invited Session

361

Wednesday, 09:45 AM - 11:15 AM, Winter Park 50

Track: Socially Responsible Operations

Invited Session: **Responsible Operations**

Chair(s): Karthik Murali

115-0106 Informal Cross-Border Trade in Africa: Operations, Policy, and Opportunities

Jimin Park, Student, Massachusetts Institute of Technology, United States

Michael Lim, Associate Professor, Seoul National University, South Korea

Karthik Murali, Assistant Professor, Oregon State University, United States

Informal cross-border trade (ICBT) refers to the illegal activities of cross-border commerce conducted by unregistered small-scale traders. We examine the operations of ICBT value chain and offer policy recommendations to successfully integrate it into the formal economy. We conduct a case study based on Uganda to obtain further policy insights.

115-0298 The Economic and Environmental Impacts of the Sharing Economy Business Model

Fahimeh Chomachaei, Assistant Professor, University of Massachusetts Boston, United States

Esther Gal-Or, Professor, University of Pittsburgh, United States

Paolo Letizia, Associate Professor, University of Tennessee, United States

Paolo Roma, Assistant Professor, Università Degli Studi Di Palermo, Italy

The sharing economy has received much attention to determine whether it is economically viable and environmentally friendly. We study economic and environmental impacts of the sharing economy and compare them with those of other traditional models. Our analysis shows that the sharing economy can yield a win-win outcome.

115-1219 Circular Economy and Optimal Reordering Under Stochastic Rates of Return

Sergey Naumov, Assistant Professor, Penn State, United States

Saurabh Bansal, Associate Professor, Penn State University University Park, United States

Daniel Guide, Professor, Penn State University University Park, United States

Circular economy can reduce primary production if stocks and flows of new and used goods are managed effectively. We conduct experiments where participants choose reordering quantity in a simulated supply chain with stochastic rates of return. The uncertainty often leads to overordering, offsetting benefits of extended product lifecycle

115-2150 Playing Fair? Environmental Impacts and Practices of Facilities in Minority Communities

Abhinav Shubham, Student, Georgia Institute of Technology, United States

Ravi Subramanian, Professor, Georgia Tech, United States

Environmental justice researchers have found evidence of racial minorities bearing disproportionate environmental burdens. However, it is unclear how facility level operational choices contribute to this disparity. We conduct an empirical investigation into the environmental and operational choices of facilities in host communities with substantial presence of racial minority populations

364

Wednesday, 11:30 AM - 01:00 PM, Celebration 1

Track: Agriculture and Food Supply Chains

Contributed Session: **Sustainable Farming and Food Security**

Chair(s): Guven Demirel

115-0561 Meteorological Drought's Influence on Water Security and its Contribution to Attaining Sustainable Development Goals

Tala Qtaishat, Associate Professor, University of Jordan, United States

Dan Bumblauskas, Associate Professor, University of Northern Iowa, United States

Jordan is threatened by severe water scarcity due to population growth and climate change. This study's purpose is to evaluate, using path analysis, the effect of drought on water security and its contribution to attaining UN-SDGs. We can conclude that climate changes affect water security and sanitation for communities.

115-0696 Can Ugly Veg Supply Chains Reduce Food Loss?

Behzad Hezarkhani, Associate Professor, Brunel University, United Kingdom

Guven Demirel, Associate Professor, Queen Mary University of London, United Kingdom

Yann Bouchery, Associate Professor, Kedge Business School, France

Manoj Dora, Professor, Anglia Ruskin University, United Kingdom

We analyze the impact of marketing misshaped fruit and vegetables, i.e. ugly veg, on food loss for different supply chain structures and using game theory. The food loss per cultivated area decreases if ugly veg is sold through a specialized retailer, while total loss might increase due to competition.

115-0889 The Effectiveness of U.S. Agriculture Export Promotion

Misty Blessley, Associate Professor, Temple University, United States

Susan Mudambi, Professor, Temple University, United States

US agricultural exports, subsidized by USDA, are important to food security and economic vitality. We study subsidy effectiveness via a proprietary dataset and conduct interviews to bring light to our quantitative results, which we structure on intellectual capital. The findings can influence public policy and managerial decision making.

115-1471 The Role of Sustainable Consumption in Food Supply Chains

Shu Guo, Lecturer, University of Liverpool, United Kingdom

The food industry creates substantial food waste every year. Compared to other stages, the consumer and retail stages are highlighted by organizations like Food and Agriculture Organization as the main causes of food waste. This paper is developed to explore the role of sustainable consumption in food supply chains.

Invited Session

365

Wednesday, 11:30 AM - 01:00 PM, Celebration 2

Track: Energy and Natural Resource Management

Invited Session: **Recent Advances in Energy Operations**

Chair(s): Alexandar Angelus

115-0460 Pricing Under Uncertainty in Multi-Interval Real-Time Markets

Jehum Cho, Student, UCLouvain, Belgium

Anthony Papavasiliou, Professor, National Technical Univ Athens, Greece

We extend the deterministic real-time market clearing model into the one with look-ahead and an endogenous representation of uncertainty. It provides the price signal minimizing a newly defined metric using the Stochastic Gradient Descent algorithm. We present results from a case study under a scenario of significant renewable energy penetration.

115-1508 Pay It Forward: The impact of Forward Price and Quantity Contracts on Renewable Energy Investments

Alexandar Angelus, Assistant Professor, Texas A&M University College Station, United States

Alain Bensoussan, Professor, University of Texas at Dallas, United States

We consider a firm's investment in renewable energy under correlated, stochastically evolving price and demand for renewable energy. The first has the option to enter a forward price or quantity contract at the time of investment. We derive the resulting optimal timing and capacity of investment and quantify resulting profits.

115-1845 Microgrid Capacity Investment: Price Dependent and Independent Demand Cases and Their Comparison

Metin Cakanyildirim, Professor, University of Texas Dallas, United States

Fariba Farajbakhsh Mamaghani, Assistant Professor, Tulane University, United States

A microgrid is a group of local generators and consumers that primarily transact with each other, buy excess demand from the grid and sell excess supply thereto. We provide a profit maximization formulation for a microgrid and reveal the effect of demand and price dependency on the optimal capacity.

Invited Session

366

Wednesday, 11:30 AM - 01:00 PM, Celebration 3

Track: Healthcare Operations Management

Invited Session: **Panel: Health Information Technology in Healthcare Operations Management: Opportunities and Ch**

Chair(s): David Dobrzykowski Rajib Dutta

115-2025 Panel:Health Information Technology in Healthcare Operations Management: Opportunities and Challenges in an Evolving Digital World

David Dobrzykowski, Associate Professor, University of Arkansas, United States

Rajib Dutta, Student, University of Arkansas, United States

Health information technology (HIT) is purported to improve healthcare operations management (HOM) and is established as an important research stream. But, what is next for research in this area? This panel features experienced HOM scholars, sharing their views on challenges and opportunities facing healthcare organizations as HIT adoption becomes universal.

Invited Session

367

Wednesday, 11:30 AM - 01:00 PM, Celebration 4

Track: Healthcare Operations Management

Invited Session: **Operational Efficiency in Healthcare Delivery Systems**

Chair(s): Seokjun Youn

115-0363 Flow Control: The Opioid Network Context

Abhishek Ray, Assistant Professor, George Mason University, United States

John Biechele-Speziale, Student, Purdue University, United States

Monika Tomar, Student, Purdue University, United States

Mario Ventresca, Assistant Professor, Purdue University, United States

We consider the problem of setting optimal limits on flows and deciding on interventions for limit violations in a given network with weighted nodes and arcs. Our formulation considers a two stage Stochastic Optimization formulation, and has elements from the opioid network setting to motivate insights.

115-0461 Dynamic Interday and Intraday Scheduling

Christos Zacharias, Assistant Professor, University of Miami, United States

Nan Liu, Associate Professor, Boston College, United States

Mehmet Begen, Associate Professor, Ivey Business School, Western University, Canada

We develop a novel dynamic programming framework and associated theoretical results addressing the joint inter-day and intra-day appointment scheduling problem. Our model is designed with the intention of bridging two well-studied streams of literature and to leverage their latest theoretical developments in tackling the joint problem.

115-0500 Individualized Dynamic Patient Monitoring Under Alarm Fatigue

Hossein Piri, Assistant Professor, Haskayne School of Business, Canada

Woonghee Huh, Professor, Sauder School of Business, UBC, Canada

Steven Shechter, Associate Professor, Sauder School of Business, UBC, Canada

Darren Hudson, Professor, University of Alberta, Canada

Hospitals are rife with alarms, many of which are false. This leads to alarm fatigue, in which clinicians become desensitized and may inadvertently ignore real threats. We develop a partially observable Markov decision process (POMDP) model for recommending dynamic, patient-specific alarms, and analyze its performance using real clinical data .

115-0578 Patient Sensitivity to Emergency Department Waiting Time Announcement

Eric Park, Assistant Professor, The University of Hong Kong, Hong Kong, China

Huiyin Ouyang, Assistant Professor, The University of Hong Kong, China

Jingqi Wang, Assistant Professor, Chinese Univ of Hong Kong (Shenzhen), China

Sergei Savin, Professor, University of Pennsylvania, United States

Timothy Rainer, Professor, The University of Hong Kong, Hong Kong, China

We study how patients respond to delay announcement in ED networks where they can decide which to attend. Using 1.3 million patient visits to 17 public hospitals in Hong Kong's universal public healthcare system, we structurally estimate how many patients are sensitive to the delay announcements and their sensitivity.

115-1289 Spinoff from Health Information Exchanges

Saeede eftekhar, Assistant Professor, Tulane University, United States

Ram Ramesh, Professor, State University of New York, United States

Doctor shopping is a phenomenon where a patient chooses to visit multiple physicians with the same expertise. Patient need to contact their physicians for the medical data when they shop. In this study we investigate whether patients can potentially view Health Information Exchanges (HIE) as a gateway.

Invited Session**369**

Wednesday, 11:30 AM - 01:00 PM, Celebration 6

Track: Healthcare Analytics

Invited Session: **Empirical Operations Management in Healthcare**

Chair(s): Umit Celik

115-0191 A Complexity-based Measure for Emergency Department Crowding

Enayon Taiwo, Assistant Professor, The University of Winnipeg, Canada

Farzad Zaerpour, Assistant Professor, The University of Winnipeg, Canada

Mozart Menezes, Professor, NEOMA Business School, France

Zhankun Sun, Assistant Professor, City University of Hong Kong, Hong Kong, China

We propose some complexity measures for ED service systems, taking into account important patient-level and system characteristics. Using an extensive data set from a Canadian ED, we demonstrate that the complexity measure is potentially more important than some well-known crowding metrics.

115-0786 Does Physician's Choice of When to Perform EHR Tasks Influence Total EHR Workload?

Umit Celik, Student, UNC Kenan-Flagler Business School, United States

Sandeep Rath, Assistant Professor, University of North Carolina Chapel Hill, United States

Saravanan Kesavan, Professor, University of North Carolina Chapel Hill, United States

Bradley Staats, Professor, University of North Carolina Chapel Hill, United States

We investigate how physicians' workflow decisions on when to perform EHR tasks affect: (1) time spent after work and (2) total time on EHR. We empirically study the trade-offs in choosing when to work on EHR tasks. We find performing pre appointment EHR reduces the physician EHR.

115-1140 Impact of Telehealth on Appointment Adherence in Ambulatory Care

Masoud Kamalahmadi, Assistant Professor, Miami Herbert Busienss School, United States

Christos Zacharias, Assistant Professor, University of Miami, United States

Howard Gitlow, Professor, University of Miami, United States

We study the effect of telehealth on patients' adherence to medical appointments in ambulatory care. Using data from a large medical system, we find that telehealth improves appointment adherence. We discuss the implications of our findings for managers and policy makers.

115-1881 Can Employees' Past Helping Behavior be Used to Improve Shift Scheduling? Evidence from ICU Nurses

Zoey Jiang, Assistant Professor, Carnegie Mellon University, United States

John Silberholz, Assistant Professor, University of Michigan, United States

Yixin Iris Wang, Assistant Professor, University of Illinois Urbana-Champaign, United States

Deena Costa, Associate Professor, University of Michigan, United States

Michael Sjoding, Assistant Professor, University of Michigan, United States

We define two measures of past helping behavior for employees assigned to a shift, and use ICU nursing data to show that both predict and significantly reduced patient length of stay. Counterfactual analysis shows promise of scheduling pairs of employees who have previously helped each other to the same shift.

Invited Session**370**

Wednesday, 11:30 AM - 01:00 PM, Celebration 7

Track: Sustainable Operations Management

Invited Session: **Sustainable and Socially Responsible OM**

Chair(s): Jason Nguyen

115-0335 An Optimal Stationary Policy for Managing Residential Energy Storage

Na Rea Cho, Student, University of Alabama Tuscaloosa, United States

Youngsoo Kim, Assistant Professor, University of Alabama Tuscaloosa, United States

Karthik Murali, Assistant Professor, Oregon State University, United States

Mesut Yavuz, Associate Professor, University of Alabama Tuscaloosa, United States

We identify an optimal stationary battery management policy for a household with a paired solar array in the presence of time-of-use tariffs and sellback credits, and develop an efficient heuristic to characterize this policy. Our results indicate that our proposed policy can substantially increase the value of home energy storage.

115-0729 Applying Energy Surcharges to Increase Supply Chain Energy Efficiency: A Cautionary Tale

Jason Nguyen, Assistant Professor, Ivey Business School, Canada

Karen Donohue, Professor, University of Minnesota, United States

Mili Mehrotra, Associate Professor, University of Illinois, United States

Energy surcharges are often used to internalize energy externalities and encourage more Energy Efficiency (EE) investments. However, the higher energy price can cause loss of domestic manufacturing to external competitors. We establish conditions when an energy price surcharge is beneficial or detrimental to domestic manufacturing, EE investment and social welfare

115-0799 Impact assessment of large-scale community-level intervention to encourage adoption of sustainable practices

Subhankar Saha, Student, Indian Institute of Management Bangalore, India

Wednesday, 11:30 AM - 01:00 PM

Haritha Saranga, Professor, Indian Institute of Management Bangalore, India

Sriram Narayanan, Professor, Michigan State University, United States

The periodical crop residue burning over the Indo-Gangetic Plain in India causes excessive particulate matter emissions with severe repercussions for public health. This study assesses the impact of large-scale community-level intervention through the lens of sustainability to encourage farmers to adopt eco-friendly practices to prevent the detrimental practice of burning.

115-1426 Diversion in Prescription Opioid Supply Chains: Evidence from the Drug Supply Chain Security Act

Jingwen Yang, Assistant Professor, University of Nevada Las Vegas, United States

Anant Mishra, Associate Professor, University of Minnesota, United States

This study investigates the diversion of prescription opioids from drug supply chains. Utilizing the enactment of the Drug Supply Chain Security Act, we empirically examine whether and how supply chain diversion of prescription opioids fuels the ongoing epidemic. We further investigate the heterogeneous impacts of diversion across demographic groups.

Invited Session

371	Wednesday, 11:30 AM - 01:00 PM, Celebration 8	Track: Sustainable Operations Management
	Invited Session: Innovative Models for Environmental Sustainability	
	Chair(s): Greys Sosic Hailong Cui	

115-0257 Waste Management Hierarchy in Sustainable Operations

Dustin Cole, Assistant Professor, Auburn University, United States

Wayne Fu, Assistant Professor, University of Michigan Dearborn, United States

This research aims to understand how waste management hierarchy influence firm environmental performance. Based on the hierarchy, we compare the impact of primary reduction, source reductions, and secondary reduction, waste reductions. We find primary reduction has a stronger impact, though this is not universal and depend on firm resource.

115-0303 Planning Bike Lanes with Data: Ridership, Congestion, and Path Selection

Jingwei Zhang, Student, University of California Los Angeles, United States

We study the bike lane planning problem considering its conflicting effects in reducing and increasing traffic congestion. In an extensive case study in Chicago, we estimate adding 25 miles of prescribed bike lanes can lift cycling mode share from 3.9% to 6.9%, with at most an 8% increase in driving times.

115-0567 Examining Sustainability as a Service Model in Retail

Huseyn Abdulla, Assistant Professor, University of Tennessee Knoxville, United States

Seulchan Lee, Assistant Professor, Michigan Technological University, United States

Han Oh, Assistant Professor, Tilburg University, Netherlands

In this research, we analytically examine a new business model in the context of an online retailer who has made a sustainability commitment to become carbon neutral and a Sustainability as a Service (SaaS) provider.

115-0728 Inter-Firm Knowledge Sharing for Energy Efficiency

Jaeseok Lee, Lecturer, The University of Auckland, New Zealand

Seongkyoon Jeong, Assistant Professor, University of Tennessee Knoxville, United States

Hyun Ju Jung, Assistant Professor, KAIST, South Korea

We empirically investigate how firms that participate in a knowledge community for energy saving improve energy efficiency. Specifically, we examine whether and how knowledge-sharing firms improve energy efficiency more than free-riders. Overall, we provide implications on how firms can contribute to a collective response to climate change.

Invited Session

372	Wednesday, 11:30 AM - 01:00 PM, Celebration 9	Track: Supply Chain Management
	Invited Session: Recent Topics in Supply Chain Management	
	Chair(s): Ki Ling Cheung	

115-0261 Offline Pricing and Demand Learning with Censored Data

Jinzhi Bu, Assistant Professor, The Hong Kong Polytechnic University, Hong Kong, China

David Simchi-Levi, Professor, Massachusetts Institute of Technology, United States

Li Wang, Student, Massachusetts Institute of Technology, United States

We study a data-driven pricing problem with lost sales. The retailer faces an unknown demand function and has the objective of using censored data to set prices and maximize expected revenues within inventory limits. We characterize the condition for problem identifiability and propose a data-driven algorithm with sample complexity guarantees.

115-0332 Selling Format and Seller Services in Online Retailing

Ki Ling Cheung, Associate Professor, Hong Kong University of Science and Technology, Hong Kong, China

Albert Ha, Professor, Hong Kong University of Science and Technology, China

JIANYUE WANG, Student, Hong Kong University of Science and Technology, Hong Kong, China

Wednesday, 11:30 AM - 01:00 PM

We study the selling format and the strategies of seller services (advertising and information sharing) in a supply chain. We fully characterize the equilibrium and show how preference of the selling format depends on the model parameters. We show the impact of more seller services with two benchmark models.

115-1331 Fairness-concerned Supply Chain Design under Random Demand and Yield

Satender Singh, Assistant Professor, Jindal Global Business School, India

Arnab Adhikari, Assistant Professor, Indian Institute of Management Ranchi, India

Amit Sachan, Associate Professor, Indian Institute of Management Ranchi, India

Arnab Bisi, Associate Professor, Johns Hopkins University Carey Business School, United States

We design a fairness-concerned dyadic supply chain comprising one manufacturer and one retailer under demand and supply uncertainties using wholesale price, buyback, option, revenue sharing, quantity discount, and sales rebate contracts, and devise coordination strategies. We propose a contract selection framework from the retailer's and manufacturer's perspectives.

115-1343 Managing Sales via Livestream Commerce: Implications of Price Negotiation and Consumer Price Search

Luyi Gui, Associate Professor, University of California Irvine, United States

Xi Lin, Student, University of California Irvine, United States

Yixin Lu, Associate Professor, George Washington University, United States

Livestream commerce has become an important sales channel with billions of revenue potential. We analyze the negotiation dynamics between the brand and the key opinion leader who promotes the product in a livestream sale. We also study how consumer search affects such dynamics and the profitability of this channel.

Contributed Session

373	Wednesday, 11:30 AM - 01:00 PM, Celebration 10	Track: Supply Chain Management
	Contributed Session: OM and Sustainability	
	Chair(s): Steven Melnyk	

115-0415 Comparing Cellular Manufacturing Methods

Bugra Ilgaz Boyukirli, Student, Southern Illinois University Edwardsville, United States

Stanislaus Solomon, Professor, Southern Illinois University Edwardsville, United States

Mitch Millstein, Professor, University of Missouri St Louis, United States

We simulate four methods of managing work flow in cellular manufacturing (one-piece flow, Conwip, drum-buffer-rope, and takt-time grouping) to determine their relative performance and sensitivity to: (1) imbalance in cycle times across cell operations, (2) variation in cycle times of cell operations, and (3) the duration of set-up times.

115-1572 Quantifying Supplier Burnout - The Development of Relevant Scales

Steven Melnyk, Professor, Michigan State University, United States

William Ritchie, Associate Professor, James Madison University, United States

Travis Tokar, Associate Professor, Texas Christian University, United States

Tobias Schoenherr, Professor, Michigan State University, United States

Zac Rogers, Assistant Professor, Colorado State University, United States

With the increasing importance of supplier initiated separation, focus is moving to the supplier and the quality of the supplier-buyer relationship. This presentations presents formative work on the development of four scales describing the quality of this relationship - supplier exhaustion, cynicism, exhaustion, and inefficacy.

115-1800 Supply base rationalization under manufacturing flexibility.

Nishant Verma, Assistant Professor, Indian Institute of Management Bangalore, India

We consider a firm that plans to invest in production flexibility in their manufacturing units. For such a firm, an important consideration is to plan its supply base to best suit its manufacturing flexibility configuration. Our study compares the impact of supply base under higher and lower manufacturing flexibility.

Invited Session

374	Wednesday, 11:30 AM - 01:00 PM, Celebration 11	Track: Manufacturing Operations
	Invited Session: Socially and Environmentally Responsible Manufacturing	
	Chair(s): Gokce Esenduran Burcu Tan Erciyes	

115-0295 Friend or Foe? How to Compete Against Unsustainable Knockoffs with Open-Source Strategy and Advertising

Fei Gao, Assistant Professor, Indiana University Bloomington, United States

We study the competition between a sustainable firm with proprietary technology and a knockoff competitor. In particular, we study two strategies that have been used by many sustainable firms to cope with the unsustainable knockoffs: (i) releasing the green technology as open source and (ii) launching an advertising campaign.

115-0347 Curbing emissions: environmental regulations and product offerings across markets

Zheng Han, Assistant Professor, Depaul University, United States

Bin Hu, Associate Professor, Naveen Jindal School of Management, United States

Wednesday, 11:30 AM - 01:00 PM

Milind Dawande, Professor, University of Texas Dallas, United States

The Trump administration's plan to freeze the EPA standard threatened to widen its gap from the CARB standard and cause a split market for automakers. We adopt a game-theoretic model considering two regulators and show that horizontal negotiations and vertical negotiations can both unify a split market.

115-0504 Manufacturing as a Service

Burcu Tan Erciyes, Associate Professor, University of New Mexico, United States

Gokce Esenduran, Assistant Professor, Purdue University, United States

Alok Chaturvedi, Professor, Purdue University, United States

Gaurav Nanda, Assistant Professor, Purdue University, United States

We study a Manufacturing as a Service environment motivated by an initiative that brings mobile manufacturing environments (i.e., Factories on Wheels - FOWs-) to low-income communities (i.e., labor firms) so that these communities make/sell products and achieve economic growth. We model the interaction between a social planner, labor firms, and FOWs.

115-1634 Increasing Manufacturing Flexibility Through Battery Management of Automated Guided Vehicles (AGVs): Effect of AGV Failure

Qazi Kabir, Assistant Professor, Rowan University, United States

Yoshinori Suzuki, Professor, Iowa State University, United States

Current literature outlines an approach of increasing manufacturing flexibility through battery management of automated guided vehicles (AGVs). However, it is not clear how the failure/breakdown of AGVs would impact such an approach to increase manufacturing flexibility. This research will fill-up that research gap.

Invited Session

375	Wednesday, 11:30 AM - 01:00 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Decision Making in Presence of Supply Chain Disruptions	
	Chair(s): Mohammad Arbabian Hossein Rikhtehgar Berenji	

115-0374 OPTIMAL INVENTORY POLICIES IN DISRUPTED SUPPLY CHAINS DURING PANDEMICS: AN APPLICATION TO DIAGNOSTIC TEST KITS

Hossein Rikhtehgar Berenji, Assistant Professor, Pacific University, United States

Mohammad Arbabian, Assistant Professor, University of Portland, United States

The COVID-19 pandemic has changed the normal life and business environments across the globe. Not long after starting large-scale testing, countries hit a roadblock-- the shortage of swabs used in the testing kits, which took place due to disruptions in the supply chain caused by COVID-19.

115-0388 Supply Chain Game Theory Network Modeling Under Labor Constraints: Applications to the Covid-19 Pandemic

Anna Nagurney, Professor, University of Massachusetts Amherst, United States

The Covid-19 pandemic has brought attention to supply chain networks due to disruptions including labor shortages. In this paper, we construct a supply chain game theory network framework that captures labor constraints under distinct scenarios with a case study on a food product. Theoretical and computational results are presented.

115-0630 Vaccine network design to maximize immunization coverage

Jarrold Goentzel, Senior Lecturer, Massachusetts Institute of Technology, United States

Timothy Russell, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Henrique Carretti, Student, MIT, United States

Yuto Hashimoto, Student, MIT, United States

We propose an optimization model with an endogenous demand function to maximize immunization access. The model was developed with UNICEF and validated with application in The Gambia. Results show that optimizing outreach site location and resource deployment could increase immunization coverage from 91.0 to 97.1% under the same budget.

115-1886 Sustainable energy transition in humanitarian medical cold chains

Sonja Saari, Student, Hanken School of Economics, Finland

Diego Vega, Assistant Professor, HUMLOG Institute, Finland

Andreas Wieland, Associate Professor, Copenhagen Business School, Denmark

Arni Halldorsson, Professor, Chalmers Institute of Technology, Sweden

This research uses the panarchy theory to analyze the vaccination trial in South Sudan in 2023. Through an in-depth case study, we aim to understand the principles for resilience and sustainability thinking that influence the narrative of using sustainable energy in humanitarian cold chains.

Contributed Session

376	Wednesday, 11:30 AM - 01:00 PM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Logistics I	
	Chair(s): Rafael Diaz	

115-0689 Revisiting the definition of humanitarian logistics

JOAKIM KEMBRO, Associate Professor, Lund University, Sweden

Nathan Kunz, Associate Professor, University of North Florida, United States

Wednesday, 11:30 AM - 01:00 PM

Lina Frennesson, Student, Lund University, Sweden

Diego Vega, Assistant Professor, HUMLOG Institute, Finland

Humanitarian logistics (HL) is a relatively new but increasingly important research area that relies on conceptual definitions from the early 2000s. We revisit and offer a revised definition of HL by combining the insights from a survey of academic research and an expert elicitation process over multiple rounds

115-0886 Incorporating Nutrition and Acceptability Considerations in Food Aid Distribution

Trilce Encarnacion, Assistant Professor, University of Missouri St Louis, United States

Haitao Li, Assistant Professor, University of Missouri St Louis, United States

This paper presents an analytical formulation to configure the supply chain of humanitarian operations distributing food aid for long periods. The tactical decision making framework enables the evaluation of trade-offs between relevant metrics not considered by current approaches, such as acceptability and nutrition.

115-1010 Measuring fairness perceptions based on Willingness-To-Accept in humanitarian logistics

Jianfang Shao, Post Doc/Researcher, University of Science and Technology of China, China

Yu Fan, Post Doc/Researcher, University of Science and Technology of China, China

Xihui Wang, Professor, School of Management, China

Inequity aversion is a widely adopted measurement of fairness perceptions. In this paper, we use Willingness-To-Accept to measure inequity aversion, which is defined as the economic compensation value obtained when facing inequitable allocation of goods/services. Deeper understanding of fairness perceptions can then be achieved to help decision-making in humanitarian logistics.

115-1954 Modeling the Mobility and Coordination for Housing Recovery After a Catastrophic Event

Rafael Diaz, Associate Professor, Old Dominion University, United States

Joshua Behr, Associate Professor, Old Dominion University, United States

Katherine Smith, Assistant Professor, Old Dominion University, United States

Beatriz Acero, Affiliated Researcher, Old Dominion University, United States

Resource assignment for housing recovery after a natural disaster is complex as the decision space is extensive and intricate. We studied displaced vulnerable segments and developed an AI approach to assist in exploring the decision space to provide the best resource allocation and schedule while considering household vulnerabilities and constraints

Invited Session

377	Wednesday, 11:30 AM - 01:00 PM, Celebration 14	Track: Service Operations
	Invited Session: Service Workforces	
	Chair(s): Vincent Slauch	

115-0710 Implications of Worker Classification in On-Demand Economy

Ming Hu, Professor, University of Toronto, Canada

Zhoupeng (Jack) Zhang, Student, Rotman School of Management, Canada

Jianfu Wang, Associate Professor, City University of Hong Kong, Hong Kong, China

We study the policy question of how gig workers shall be classified, focusing on the welfare of full-timers, who depend on gig jobs as primary income sources. Reclassifying gig workers uniformly may hurt full-timers due to marketplace operator's undercutting or workers' overjoining. Flexible schemes can Pareto improve over uniform approach.

115-1669 Driving Win-Win Efficiencies for Outsourced Litigation and Other Complex Services

Jacob Chestnut, Assistant Professor, Cornell University, United States

Damian Beil, Professor, University of Michigan, United States

We consider the management of complex non-routine white-collar services. We develop an analytical model of the benefit of supplier process reengineering and explore how various aspects of the business setting differentially affect this benefit, leading to conflicting incentives. We show that both firms in the supply chain can benefit.

115-1687 Adoption Platform Design to Improve Outcomes for Children with Disabilities

Ludwig Dierks, Post Doc/Researcher, University of Zurich, Switzerland

Vincent Slauch, Assistant Professor, Cornell University, United States

Utku Unver, Professor, Boston College, United States

We model a child adoption matching platform in which families state their capability to care for a child with high special needs. We analytically derive the optimal child-matching mechanism that incentivizes families to truthfully represent their capabilities and provide managerial insights to inform how to recruit and coach families.

115-1785 Hiring Preference and Operational Complexity for Tribal Enterprises

Jacob Ornelas, Student, Cornell University, United States

Vincent Slauch, Assistant Professor, Cornell University, United States

Chris Anderson, Associate Professor, Cornell University, United States

We describe how workforce composition goals interact with operational challenges for Native American enterprises. Based on interviews with tribal casino executives, we focus on both tactical and strategic workforce challenges, some of which arise in unique ways for tribal enterprises and others that reflect broader service industry trends.

Invited Session

378	Wednesday, 11:30 AM - 01:00 PM, Celebration 15	Track: Information Systems and Operations Management
	Invited Session: Manufacturers' platform-based innovative operations and large-scale optimization	
	Chair(s): Jun Pei Wenjuan Fan	

115-1171 Optimal Content-sharing Strategy for Online Streaming Platforms

Eunsol Yoo, Student, Korea University, South Korea
 Kihoon Kim, Professor, Korea University, South Korea

Many subscription-based video-on-demand (SVoD) platforms are currently focusing on creating exclusive content to attract more subscribers. This research models two competing platforms' choices between leasing and not leasing exclusive content investigating the impact of their choices on the SVoD market size and the competition results.

115-1917 A Platform's Dilemma in Controlling Marketplace Transactions

Sumanta Singha, Assistant Professor, Texas Tech University, United States
 Rajib Saha, Associate Professor, Indian School of Business, India
 Abhijeet Ghoshal, Associate Professor, UIUC, United States

We study an online platform with network effects, where buyers impose a negative externality on other buyers. The platform can minimize this negative externality by applying control or pricing as a lever. Using a game-theoretic model, we characterize the market and present several interesting results about the platform's strategy.

115-2002 Joint decisions on capacitated lot-sizing and supplier selection under the effects of delivery time quotation

Fangjun Zhu, Student, Hefei University of Technology, China
 Jun Pei, Professor, Hefei University of Technology, China
 Ya Zhou, Student, Hefei University of Technology, China

This paper investigates a manufacturer's joint decisions on capacitated lot-sizing and supplier selection with the objective to minimize the cost, the joint decisions consist of three decisions: production decision, replenishment decision, and supplier selection decision. Particularly, the delivery time quotation is considered.

115-2004 When Platform Exploits Data Analysis Advantage: Change of OEM-led Supply Chain Structure

Ping Yan, Student, Hefei University of Technology, China
 Jun Pei, Professor, Hefei University of Technology, China
 Ya Zhou, Student, Hefei University of Technology, China

The development of digital technology has enabled e-commerce platforms to use the data generated in their ecosystems, helping firms forecast the online demand more accurately. This study considers a two-echelon supply chain and investigates the relations between the forecast information and firms' channel strategies.

Invited Session

379	Wednesday, 11:30 AM - 01:00 PM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Emerging Topics in Operations Management XIV	
	Chair(s): Fan Zou Zhihao Zhang	

115-0647 Examining the Mechanism of Financing a Push or Pull Supply Chain

Xiaofeng Xie, Associate Professor, Sichuan University, China
 Xun Xu, Associate Professor, California State University Dominguez Hills, United States
 Zixuan Zhou, Student, Sichuan University, China
 Jing Gu, Professor, Sichuan University, China

Participants may have the capital constraint to prevent their normal operations in a push or pull supply chain. Financing mechanisms can be different given the different operations of a push or pull supply chain, which are examined in this study. We provide managerial insights to improve supply chain performance.

115-1690 Proposal of a Knowledge-Based Expert System for Risk Management in Health Audit Projects

Eduyn López, Assistant Professor, Universidad Distrital Francisco José de, Colombia
 Camilo Bustos, Student, Universidad Distrital Francisco José de, Colombia

We present a knowledge-based expert system for risk assessment in health audit projects. We use a fuzzy group decision making approach (FGDMA) to qualify a predetermined list of risks through linguistic terms that are then converted into numerical values. We present some results from a data set in Colombia

115-1863 Helping Vulnerable Hospitals

Meng Li, Associate Professor, University of Houston, United States
 Qiang Li, Assistant Professor, Wilfrid Laurier University, Canada
 Wei Gu, Associate Professor, University of Science and Technology Beijing, China

Due to the uneven distribution of healthcare resources, hospitals in developing countries often struggle to provide essential medical services and supplies evenly throughout their communities. We take advantage of an exogenous event of the introduction of outside experts to examine the impact of the program on service efficiency and quality.

Invited Session**381**

Wednesday, 11:30 AM - 01:00 PM, Blue Spring 1

Track: Supply Chain Risk Management

Invited Session: Emerging Disruptive Technologies in Omni-Channel Supply Chains

Chair(s): Ahmet Colak

115-0125 Do Global Political Uncertainty Influence Online Reviews? "Evidence from Amazon Global Review Sharing"

Maneesh Reddy Ajjuguttu, Student, Clemson University, United States

Ahmet Colak, Assistant Professor, Clemson University, United States

Lawrence Fredendall, Professor, Clemson University, United States

Since 2020 Amazon has followed an innovative strategy to share global reviews. Under this strategy, Amazon posts reviews from Amazon's international markets on Amazon.com. In this research, we study the effects of review-sharing on Amazon's domestic market in the USA under the influence of economic policy uncertainty.

115-0981 The hidden cost of coordination: Customers' role in last-mile delivery

Natalie Epstein, Student, HBS, United States

Santiago Gallino, Assistant Professor, The Wharton School, United States

Antonio Moreno, Associate Professor, Harvard University, United States

Communication between service providers and customers is key for service operations. We partner with a last-mile delivery company to study the impact the communication channel used to inform customers their order is out-for-delivery. We conduct field experiments to study the impact on failed deliveries.

115-1098 The Impacts of Algorithmic Work Assignment on Fairness Perceptions and Productivity: Evidence from Field Experiments

Bing Bai, Student, Washington University in St. Louis, United States

Hengchen Dai, Assistant Professor, University of California Los Angeles, United States

Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

Fuqiang Zhang, Professor, Washington University St Louis, United States

Haoyuan Hu, Technical Specialist, Alibaba Group, China

We study how algorithmic (vs. human-based) task assignment processes change workers' fairness perceptions and productivity. In two field experiments with Alibaba where warehouse picking workers received tasks either from an algorithm or a human, the algorithmic assignment process was perceived as fairer and yielded productivity gains.

115-1419 Understanding Features in New and Used Products: Evidence from Automotive Industry

Hojun Choi, Student, Northwestern University, United States

Ahmet Colak, Assistant Professor, Clemson University, United States

Sina Golar, Assistant Professor, Kennesaw State University, United States

Achal Bassamboo, Professor, Northwestern University, United States

Features on durable goods have evolved due to OEMs and vendors' constant efforts to improve their products to match consumers' changing preferences. Yet, the effects of features are under-explored, particularly on new and used products. Using large automotive industry datasets, we study features' collective impacts on pricing and sales performance.

Invited Session**382**

Wednesday, 11:30 AM - 01:00 PM, Blue Spring 2

Track: Supply Chain Risk Management

Invited Session: Supply Chain Management with Emerging Risks

Chair(s): Rong Li Xiaole Wu

115-0030 Multi-Period Supply Chain Coordination in Franchise Networks: The Necessity of Trading Platform

Rong Li, Associate Professor, Syracuse University, United States

Liangbin Yang, Assistant Professor, Syracuse University, United States

Xiaohang Yue, Associate Professor, University of Wisconsin - Milwaukee, United States

We study how to achieve channel coordination in a multi-period setting with the help of inventory platforms that allow inventory trading within a franchise network. We show that coordination requires the franchisor to use inventory trading and serve as the market maker, profit only from royalties, and not compensate shipping.

115-0076 Reshoring under Tariff Uncertainties and Competition

Xiao Tan, Student, Washington University in St. Louis, United States

Panos Kouvelis, Professor, Washington University in St. Louis, United States

Sammi Tang, Associate Professor, University of Miami, United States

Recent developments in U.S. tariff policies prompt companies to rethink the need for a diversified global supply chain, particularly by adding an onshore production location to the current offshore location. We adopt Newsvendor Network framework to analyze the global firm's reshoring capacity decisions with competition and demand and tariff uncertainties.

115-0759 Financial Hedging and Operational Flexibility

Qi Wu, Assistant Professor, Case Western Reserve University, United States

Peter Ritchken, Professor, Carnegie Mellon University, United States

Wednesday, 11:30 AM - 01:00 PM

Firms that lack operational flexibility find it costly to alter production volume. Such firms may have greater need to hedge against volatile prices so as to reduce the probability of costly lower tail outcomes. Our paper is concerned with how technological flexibility jointly impacts capital structure and financial hedging decisions.

Invited Session

383	Wednesday, 11:30 AM - 01:00 PM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Empirical Research in Different Application Areas of Operations Management	
	Chair(s): Saurabh Ambulkar	

115-0514 The Impacts of In-App Baggage Tracking on Airline Baggage-Handling Performance

Zenan Zhou, Assistant Professor, Arizona State University, United States

Xiang Wan, Associate Professor, Ohio State University, United States

Hongshuang (Alice) Li, Associate Professor, The Ohio State University, United States

A. Knemeyer, Professor, Ohio State University, United States

Major airlines have improved their mobile applications (apps) by providing passengers with a real-time baggage tracking function. This study explores the impacts of the implementing airlines' introduction of in-app baggage tracking on their baggage-handling performance and that of the non-implementing airlines.

115-1103 Do Competitor Promotions Cause Spillover Effects across Platforms? Evidence from Video Games

Campbell Clarkson, Student, University of South Carolina, United States

Spillover effects have been studied extensively, but the extent of these effects for digital goods across online platforms is not entirely clear. In this paper, we empirically examine the implications of promoting video games on the user traffic for those same games on a different platform.

115-1196 An empirical investigation of the effects of the US airport network on departure delays

Saeyoung Yoon, Student, KUBS(Korea University Business School), South Korea

Hyun Seok (Huck) Lee, Associate Professor, KUBS(Korea University Business School), South Korea

Using eight years of archival data for all US flights of all airlines among all airports, obtained from Bureau of Transportation Statistics, we empirically investigate the relationship between network metrics and airline departure delays in the US airport network.

115-1853 The Impact of Telemedicine on Mental Healthcare Service Usage and Quality: An Empirical Investigation

Yi Tang, Student, University of Minnesota, United States

Telemedicine is becoming increasingly popular for mental healthcare delivery especially during the COVID-19 pandemic. In this study, we find empirical evidence that enhancing affordability of and access to telemedicine increases patients' overall usage of mental health services, which ultimately improves mental healthcare quality.

Contributed Session

384	Wednesday, 11:30 AM - 01:00 PM, Rainbow Spring 2	Track: Operational Excellence
	Contributed Session: Panel: Industry and Academic Collaboration on Lean	
	Chair(s): Eric Olsen	

115-1774 Win-Win Scenarios for Industry and Academia Collaboration in Research

Eric Olsen, Professor, California Polytechnic State University - San Luis Obispo, United States

Facilitated discussion to identify best practices and approaches for industry and academia to collaborate on significant research to move the field of operational excellence forward. Presenting and building on results of discussions with industry and academic professionals started at the 2023 Lean Summit hosted by the Lean Enterprise Institute.

115-1783 Bringing Gemba into the Classroom - Industry and Academic Collaboration in Teaching

Eric Olsen, Professor, California Polytechnic State University - San Luis Obispo, United States

Facilitated, interactive discussion to identify best practices and approaches for bringing relevant industry practice and experience into university courses. Presenting and building on results of discussions with industry and academic professionals started at the 2023 Lean Summit hosted by the Lean Enterprise Institute.

Invited Session

385	Wednesday, 11:30 AM - 01:00 PM, Barrel Spring 1	Track: POM-Marketing Interface
	Invited Session: Sharing Economy	
	Chair(s): Tao Li	

115-0160 Competition between P2P Ridesharing Platforms and Traditional Taxis

Wen Diao, Assistant Professor, Shandong University of Finance&Economics, China

Baojun Jiang, Professor, Washington University St Louis, United States

Lin Tian, Associate Professor, Fudan University, China

This paper analytically examines a market with two segments of consumers based on their travel distances, where a p2p platform and a traditional taxi company have different inconvenience costs and compete for customers through pricing.

115-0773 Product Sharing: A Threat or an Opportunity for Competing Manufacturers?

Dali Huang, Student, Tianjin University, China
Tao Li, Associate Professor, Santa Clara University, United States
Zhen He, Professor, Tianjin University, China

This paper studies the impact of product sharing on competing manufacturers under a platform's different quality entry barrier strategies. Our paper provides the first study on how to cope with the sharing phenomenon for competing manufacturers, sharing platforms and consumers. The results present several managerially interesting and important insights.

115-0913 Fixed commission in on-demand matching

Ming Hu, Professor, University of Toronto, Canada
Yun Zhou, Associate Professor, McMaster University, Canada

We consider a on-demand service platform that relies on independent contractors to provide service. The platform sets both the service price and commission. We bound the performance of a fixed commission across heterogenous market conditions and discuss factors that drive the performance.

115-1521 Exploring restaurant's and food delivery platform's online pricing strategies

Yong Xia, Student, University of California San Diego, United States
Zhe Zhang, Assistant Professor, University of California San Diego, United States

Different from other online-offline retails, restaurants establishing the online channels have flexible online pricing and share the revenue with third-party platforms. Additionally, restaurants face potential risks of food quality reduction during the delivery process. This paper develops a model to examine how these online settings affect restaurant's online pricing strategies.

Invited Session

386	Wednesday, 11:30 AM - 01:00 PM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Procurement Strategies	
	Chair(s): Kai Wendt	

115-0205 Unlocking Barriers to Inclusive Procurement - ISM & MICMAC Approach

Asad Ali Qazi, Student, University of Rome - Tor Vergata, Italy
Andrea Appolloni, Associate Professor, University of Rome - Tor Vergata, Italy

Study aims to investigate the barriers to adopt inclusive procurement. Diverging from previous research focused on developing a broad understanding of socially responsible purchasing. The paper identifies the barriers through literature review and further examines the interdependencies and influence among barriers through Delphi Method.

115-0488 Algorithm Reliance for Binary Classification: Implications for Fairness

Clare Snyder, Student, University of Michigan Ann Arbor, United States
Samantha Keppler, Assistant Professor, University of Michigan Ann Arbor, United States
Stephen Leider, Professor, University of Michigan Ann Arbor, United States

Algorithms play a major role in binary classification decisions such as hiring, denying bail, and awarding loans, often as support for human decision-makers who might ultimately deviate from the algorithm's advice. How do behavioral biases affect algorithm reliance in these cases, and what implications does this have for decision fairness?

115-0820 E-commerce Platform's Information Sharing and Selling Contract Choice with Supplier's Offline Showroom Investment

Jiahao Yu, Student, Renmin University of China, China
Jianghua Wu, Professor, Renmin University of China, China

In this study, we study the platform's information sharing and selling contract choice when the supplier can invest in showroom to boost its sales in both online and offline channels. We find that the supplier will strategically adjust his investment level in offline showroom when its selling contract varies.

115-1327 Payment Algorithm Transparency on On-Demand Service Platforms

Swanand Kulkarni, Student, Georgia Institute of Technology, United States
Basak Kalkanci, Associate Professor, Georgia Institute of Technology, United States
Chris Parker, Associate Professor, American University, United States

Motivated by service platforms' move towards less-intuitive and opaque algorithms that determine workers' compensation, through incentivized experiments, we examine how a pay algorithm's intuitiveness to workers, its transparency, and a change that reduces algorithm's intuitiveness affect workers' engagement and perceptions. Results reveal the effectiveness of transparency in managing workers' experience.

115-2161 Behavioral Simulation of Blockchain-enabled Market for Supplier Capacity Trading among Retailers

Kai Wendt, Student, WHU - Otto Beisheim School of Management, Germany
Daniel Hellwig, Student, WHU - Otto Beisheim School of Management, Germany

Wednesday, 11:30 AM - 01:00 PM

We study markets for trading supplier capacity among retailers facing random demands and varying goods valuations. Retailers buy claims on supplier's capacity before knowing their demand and trade them after demand realization. Two novel trading strategies emerge. Players, whom we call spot sellers, buy more claims than the maximum demand initially and sell excess to the market. Other players, whom we call spot buyers, buy few claims from the supplier, using the market instead. These strategies reinforce each other, reduce a player's demand risk, and contribute to the reduction of mismatch between supply and demand. In small markets, clearing prices are correlated with the product values and the net demand. But in large markets, clearing prices are anchored to the capacity reservation price and do not reflect either product values or the net demand.

Invited Session

387	Wednesday, 11:30 AM - 01:00 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: POM-Economics Interface Applications	
	Chair(s): Xin Fang Zhaowei She	

115-0272 Constructing Quantiles via Forecast Errors: Theory and Empirical Evidence

Zhi Chen, Assistant Professor, National University of Singapore, Singapore

Long Zhao, Assistant Professor, NATIONAL UNIVERSITY OF SINGAPORE, Singapore

Probabilistic forecasts (e.g., quantiles) are essential for decision-making under uncertainty. One simple approach of constructing quantiles leverages historical forecast errors. The sample quantile and normal approximation are two popular estimators. To understand their relative efficacies, we develop a theoretical framework using bias-variance decomposition and empirically test our theories.

115-1078 Traceability and Product Recalls in a Vertically-Integrated Food Supply Chain

Beyza Celik, Student, University of Texas at Dallas, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

Traceability can help reduce the cost of food recalls. However, it does not eliminate the probability of food safety crises. By considering the optimal traceability level and the contamination mitigation efforts of a vertically-integrated firm, we examine the impact of traceability on the interaction between a firm and its consumers.

115-1575 Inventory Disclosure with Product Returns

Tolga Aydinliyim, Associate Professor, Zicklin School of Business, United States

Ceren Gultekin, Student, Zicklin School of Business, United States

We study whether selective-inventory-disclosure, which can mitigate the adverse profit implications of consumers' strategic purchase deferrals, remains effective when product returns are allowed. Using a price- and refund-setting newsvendor framework with availability-dependent demand, we show consistent-inventory-disclosure to be optimal. Furthermore, equilibrium refund relative to consistent-inventory-masking can be higher or lower.

Invited Session

389	Wednesday, 11:30 AM - 01:00 PM, Regency Ballroom O	Track: Retail Operations
	Invited Session: New topics in retail operations	
	Chair(s): Xin Liu	

115-0397 Sales contests with minimum sales volume requirement: Models and analysis

Zhen Shao, Student, University of Science and Technology of China, United States

Yangyang Xie, Assistant Professor, University of Science and Technology of China, China

Wenjuan Li, Student, Hong Kong University of Science and Technology, China

Qinglong Gou, Associate Professor, University of Science and Technology of China, China

This paper proposes a modified winner-take-all sales contest which requires a minimum sales volume, and addresses two primary questions: (i) how salespersons' effort-spending behavior will be affected by this minimum requirement, and (ii) whether and under which conditions a firm should adopt the minimum sales requirement.

115-0761 Trade-in Strategy for Manufacturers Considering Government Subsidy and Marketing Effort

Xiaoya Han, Lecturer, University of Shanghai Science and Technology, China

Xin Liu, Assistant Professor, Elon University, United States

To explore how manufacturers should implement trade-in programs, whether to delegate trade-ins to retailers and whether to invest in marketing effort, we construct a closed-loop supply chain dominated by a manufacturer. This paper focuses on trade old for cash and trade old for new by considering government subsidy.

115-0882 The Value of 'Buy-Online-Pickup-in-Store' for Retailers to Manage Online Fulfillment

Lina Zhang, Lecturer, University of Exeter, United Kingdom

Alexander Hübner, Professor, Technical University of Munich, Germany

Livio Fenga, Senior Lecturer, University of Exeter, United Kingdom

This research focuses chiefly on the impact of offering 'Buy-Online-Pickup-in-Store (BOPS)' in addition to home delivery to online consumers on a retailer's demand and profit. Specifically, we investigate how the retailer can design the delivery/collection options with different speeds and fees to steer consumers' fulfillment demand for increased profitability.

115-0999 A risk-sharing mechanism for the insurance of multi-region catastrophe considering government subsidies

Mengzhe Zhou, Student, School of Management, China

Wednesday, 11:30 AM - 01:00 PM

Xihui Wang, Professor, School of Management, China

In this study, we introduce a risk-sharing mechanism which determines region contributions to the total premium by accounting for disaster risks as well as the economic status of the regions. Superior government's subsidies are introduced when considering region's economic affordability. The proposed insurance scheme's performance is analyzed in practice.

Invited Session

390	Wednesday, 11:30 AM - 01:00 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: IS/OM Interface	
	Chair(s): Yeongin Kim	

115-0756 Does tolerance for failure matter for innovation?

Zhijian Cui, Professor, University of Science and Technology of China, China

We examine TFF's relationship with the firms' R&D investment and innovation performance. Our results reveal the dual roles TFF plays in a firm's innovation. TFF culture positively relates to a firm's R&D investment as well as its innovation quality. It negatively relates to innovation quantity.

115-0817 Online Crowdlending in Humanitarian Operations and Crisis Management

Zhiyi Wang, Assistant Professor, University of Colorado Boulder, United States

Lusi Yang, Assistant Professor, Georgia State University, United States

Varun Karamshetty, Assistant Professor, National University of Singapore, Singapore

Jungpil Hahn, Professor, National University of Singapore, Singapore

The OM literature has been silent about whether crowdlending can be used as an effective channel for HOCM fundraising, given that lenders in crowdlending are characterized by both prosocial and risk considerations. We examine the interplay between prosocial motivations and risk considerations of crowd lenders during a crisis.

115-1757 Do Workers and Customers Benefit from Competition Between On-demand Service Platforms?

Saif Benjaafar, Professor, University of Minnesota, United States

Shihong Xiao, Assistant Professor, Fudan University, China

Xiaotang Yang, Student, University of Minnesota, United States

We describe a game-theoretical model to study the effect of competition between on-demand service platforms. The platforms compete for workers and customers by deciding on wages to pay workers and prices to charge customers. We show that competition does not necessarily lead to higher worker welfare and higher consumer.

115-1792 Effects of Human Intervention on the Efficacy of CNN-Driven Recommender Systems in Online Fashion Retail

Heeseung Lee, Assistant Professor, University of Texas at Dallas, United States

This study investigates the economic performance of two variants of image-based recommender systems that are developed on the basis of deep learning-driven convolutional neural networks (CNNs) in the context of fashion retailing.

Contributed Session

391	Wednesday, 11:30 AM - 01:00 PM, Silver Spring 1	Track: Data Science and Analytics
	Contributed Session: Analytics for Managing Supply and Demand	
	Chair(s): Michelle Rodriguez	

115-1619 Observatory of Urban Cargo Transportation of Metropolitan Lima

Claudio Ortega, Reader, Universidad del Pacifico, Peru

Michelle Rodriguez, Professor, Universidad del Pacifico, Brazil

Andres Regal, Student, Universidad del Pacifico, Peru

The Observatory of Urban Cargo Transportation of Metropolitan Lima was generated to systematically collect and permanently store data from the urban cargo transportation system in Metropolitan Lima. We present the implementation process, insights, and challenges from working with a private company with a 652-vehicle fleet and 18 months of data.

115-1794 Vaccine Demand Forecasting

Abhijeet Kumar, Student, University of North Texas, United States

Victor Prybutok, Professor, University of North Texas, United States

Vikas Sangana, Student, University of North Texas, United States

The effectiveness of conventional demand planning strategies has been undermined by the complexity of the supply chain and the changing customer behaviour. In this study we are using ML technique to accurately predict the demand.

115-1846 State of the Arts: Understanding Infrastructure Bias Using Location Analytics Add to Itinerary

Karthik Kannan, Assistant Professor, Southern Methodist University, United States

Sridhar Narasimhan, Professor, Georgia Institute of Technology, United States

Infrastructure bias emerges when the location of existing nonprofit arts and cultural organizations favors some communities while disadvantaging others from having equitable access to artistic and socio-cultural engagement. We develop methods to reduce this bias.

Wednesday, 11:30 AM - 01:00 PM

115-1851 Managing Supply and Demand for the Non-profit Performing Arts Organizations in the Time of COVID

Karthik Kannan, Assistant Professor, Southern Methodist University, United States

We develop a data-driven framework and decision support tool to explain and predict demand for live, in-person arts performances in the time of COVID. We use proprietary ticketing data from more than 100 performing arts organization, mobility data, to examine how the market for arts has changed after COVID-19.

Contributed Session

392	Wednesday, 11:30 AM - 01:00 PM, Silver Spring 2	Track: Inventory and Logistics Management
	Contributed Session: Multi-Echelon Inventory Systems	
	Chair(s): Sabitha Devarajulu	

115-0627 Multi-Echelon Distribution Network Design

Li-Lian Gao, Associate Professor, Hofstra University, United States

Powell Robinson, Professor, University of Houston, United States

Funda Sahin, Associate Professor, University of Houston, United States

The growth of e-commerce presents challenges to distribution network design. We consider a multi-echelon distribution network that could consist of central distribution centers, order fulfillment centers, cross-docking, and stores. The number, location, and allocation of demand to facilities are to be determined. We present an MIP formulation and computational experience.

115-0792 Online Learning for Serial Multi-echelon Inventory Systems

Yufei Zhao, Student, The Chinese University of Hong Kong, Hong Kong, China

Zhanyue Wang, Student, The Chinese University of Hong Kong, China

Xiangyu Gao, Assistant Professor, The Chinese University of Hong Kong, Hong Kong, China

We consider a classical serial multi-echelon inventory system under the online learning setting, where the decision-maker does not know the demand distribution but learns as the data comes in. We apply the sample average approximation (SAA) method to the online learning algorithm and show a square root convergence rate.

115-1689 Optimal Production and Inventory Control of a Supply Chain with Process Flexibility

Huasheng Yang, Post Doc/Researcher, Tsinghua University, China

David Kaufman, Assistant Professor, University of Michigan-Dearborn, United States

Wanshan Zhu, Professor, Renmin University of China, China

Li Zheng, Professor, Tsinghua University Department of IE, China

We consider a multi-stage make-to-order supply chain with process flexibility for multiple products. We study the dynamic production and inventory control problem and the associated process flexibility design problem. Despite the curse of dimensionality, we show that the problem is partially decomposable, reducing to lower-dimensional subproblems.

Invited Session

393	Wednesday, 11:30 AM - 01:00 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Blockchain and Cryptocurrencies	
	Chair(s): Rowena Gan	

115-0428 Split or Steal? Sabotage and Reciprocity in Cryptocurrency Mining Pools

John Biechele-Speziale, Student, Purdue University, United States

Abhishek Ray, Assistant Professor, George Mason University, United States

Mario Ventresca, Assistant Professor, Purdue University, United States

Using both game theory and agent-based simulation, we examine how cryptocurrency mining pools, through asymmetric retaliation to sabotage attempts, can achieve better outcomes than prior work suggests. Additionally, we examine how environmental and internal parameters impact purely rational attack dynamics, and the limitations of common contracts to completely disincentivize sabotage.

115-0870 The Effect of Ethereum's Gas Price Mechanism on the Heterogeneity of Platform Complements

Daniel Obermeier, Post Doc/Researcher, New York University, United States

Hanna Halaburda, Associate Professor, New York University, United States

Blockchain technology disintermediates digital platforms by substituting the platform provider's ability to set prices for transacting on a platform with a market mechanism. We use a sample of 1,590 decentralized applications on Ethereum to investigate how this constraint on a platform provider's strategic toolkit affects the platform's innovation capability.

Invited Session

394	Wednesday, 11:30 AM - 01:00 PM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Emerging Topics in Socially Responsible Operations	
	Chair(s): Suvrat Dhanorkar Mateus do Rego Ferreira Lima	

115-0556 Mitigating Trade-offs between Safety and Completion Time: Public Relative Performance Feedback and Best Practice Sharing

Wednesday, 11:30 AM - 01:00 PM

Soh Hyun Chu, Student, Ohio State University, United States

Elliot Bendoly, Professor, Ohio State University, United States

James Hill, Associate Professor, Ohio State University, United States

Implementing a time and motion laboratory experiment, we observe the effects of controlled conditions on completion time and safety. Treatments include feedback format, the existence of potentially conflicting feedback, and shared best practice training. We find conditions that help promote safe worker behavior even in the presence of time-specific priorities.

115-0730 Do Recycling Standards Create or Destroy Value? Evidence From the National Sword Policy

Christian Blanco, Assistant Professor, Ohio State University, United States

Mateus do Rego Ferreira Lima, Student, The Ohio State University, United States

Suvrat Dhanorkar, Associate Professor, Penn State University State College, United States

We built a fixed-effects panel regression model using five years of product daily prices (2016-2020) to investigate 1) the effects of the Chinese Sword Policy on the price of waste products in the United States, and 2) what interventions were effective in mitigating the effects of the Sword.

Contributed Session

397	Wednesday, 02:45 PM - 04:15 PM, Celebration 1	Track: Agriculture and Food Supply Chains
	Contributed Session: Financing Issues in Agriculture	
	Chair(s): Kalinga Jagoda	

115-0037 Financing Models for Marginal Farmers to ensure Quality in Agricultural Supply Chain

Samir Biswas, Student, Indian Institute of Management Calcutta, India
Preetam Basu, Senior Lecturer, Kent Business School, United Kingdom
Balram Avittathur, Professor, Indian Institute of Management Calcutta, India

Lack of financial resources hinders smallholder farmers from producing high-quality agricultural products. Recently, online platforms have come up with novel financing schemes for these marginal farmers. Using a game-theoretic model, we explore the effectiveness of different financing schemes, viz. bank, guarantor and platform financing in improving agricultural product quality.

115-0571 Government subsidy policy in the agricultural supply chain considering yield uncertainty

Zhaofang Mao, Professor, Tianjin University, China
Zhengbo Liang, Student, Tianjin University, China

The equilibria with and without the government subsidy policy in a three-tier agricultural supply chain are investigated. Besides the condition without the government subsidy policy, two scenarios that the government provides a cost subsidy to the farmers and the government provides purchasing subsidy to one of the retailers are studied.

115-1154 Gaps in Cotton Supply Chain Financing among Cash-constrained Farmers in Benin: The Case of Kambara

Rachad Bani Samari, Student, American University In Cairo, Benin
Sherwat Ibrahim, Associate Professor, Princeton University, Egypt

Benin almost tripled its cotton output within three years, however, contrary to literature, monetary poverty is on the rise in the top three cotton producing departments. Our study reveals a misalignment between Agriculture Supply Chain Financing and farmers needs and goals created a vicious circle of monetary poverty among smallholders.

115-2021 Optimizing Value Creation and Capture through Supply Chain Mapping

Kalinga Jagoda, Associate Professor, University of Guelph, Canada
Senevi Kiridena, Senior Lecturer, University of Wollongong Australia, Australia

With changing population demographics specialty crops present significant opportunities for agri-businesses to develop niche markets or integrate into established supply chains. This paper map hazelnut supply chain, using a suite of tested methodological approaches to evaluate their market potential, considering total supply chain costs, lead times and responsiveness.

Invited Session

398	Wednesday, 02:45 PM - 04:15 PM, Celebration 2	Track: Energy and Natural Resource Management
	Invited Session: Energy Transitions	
	Chair(s): Fariba Farajbakhsh Mamaghani Metin Cakanyildirim	

115-0279 Open BIM integration into Oil and Gas supply chain

Daniel Luiz Nascimento, Professor, CERTI, Brazil
Flavio Magno, Project Manager, CERTI, Brazil
Alessandra Roeder, Project Manager, CERTI, Brazil
Diego Calvetti, Post Doc/Researcher, CERTI, Portugal
Guilherme Tortorella Tortorella, Associate Professor, University of Melbourne, Australia

This work aims to improve the process of requesting, designing, supplying and building/installing flexible pipelines for the extraction of oil and gas. We conducted an analysis of the current process and designed a future proposal where Open BIM could be incorporated. Results suggest that suppliers collaboration increased given the digitalization.

115-1497 The Impact of Supply Intermittency on Optimal Timing and Capacity of Renewable Energy Investments

Alexandar Angelus, Assistant Professor, Texas A&M University College Station, United States

We address optimal timing and capacity of consumers' investment in renewable energy under supply intermittency, net metering, and stochastically evolving demand. Supply intermittency is shown to delay that investment, while net metering speeds it up. In contrast to existing results, incorporating supply intermittency does not necessarily reduce the optimal capacity.

115-1616 BIOGAS PROJECTS AND DECISION-MAKING MODELS: A BIBLIOMETRIC STUDY

Claudia Luengo, Student, Londrina State University, Brazil
Saulo Amâncio-Vieira, Professor, Londrina State University, Brazil
Daniela Yamaji, Student, Londrina State University, Brazil
Eduardo Contani, Professor, Londrina State University, Brazil
Reginaldo Fidelis, Professor, UTFPR-Campus Londrina, Brazil

This work presents the biogas and decision-making state of the art reported in the international literature. Therefore, the applied strategy is to identify and understand the theme approaches through bibliometric laws, descriptive statistics, and co-authorship networks to map and identify productions related to the theme.

Wednesday, 02:45 PM - 04:15 PM

115-1848 Harvesting Solar Power Foments Prices in a Vicious Cycle: Breaking the cycle with price mechanisms

Metin Cakanyildirim, Professor, University of Texas Dallas, United States

Fariba Farajbakhsh Mamaghani, Assistant Professor, Tulane University, United States

Distributed solar power generation is growing but not necessarily benefiting the utility firms. Reducing the demand, it hinders the coverage of utility costs with reasonable retail electricity prices. We provide a profit maximization formulation for a utility and reveal the interaction between optimal price increases and growing solar power adoption.

Invited Session

399	Wednesday, 02:45 PM - 04:15 PM, Celebration 3	Track: Healthcare Operations Management
	Invited Session: Managing Hospital Operations: Theory and Practice	
	Chair(s): Nan Liu Miao Bai	

115-0092 Helping the Captive Audience: Advance Notice of Diagnostic Service for Hospital Inpatients

Miao Bai, Assistant Professor, University of Connecticut, United States

Nan Liu, Associate Professor, Boston College, United States

Zheng Zhang, Assistant Professor, Zhejiang University, China

Inpatients are often treated as "on-demand" for hospital diagnostic service, and they are notified only when service capacity is available. This arrangement causes chaos and inefficiencies in operations. We propose "advance notice", an innovative scheduling paradigm that strikes a fine balance between the classic advance scheduling and allocation scheduling paradigms.

115-0353 Prediction-Driven Surge Planning with Application in the Emergency Department

Yue Hu, Post Doc/Researcher, University of Chicago, United States

Carri Chan, Professor, Columbia University, United States

Jing Dong, Associate Professor, Columbia University, United States

We study a two-stage prediction-driven nurse staffing framework where the prediction models are integrated with the base (made weeks in advance) and surge (made nearly real-time) staffing decisions in the ED. We propose a near-optimal two-stage staffing policy and identify the importance of balancing demand uncertainty versus system stochasticity.

115-1152 Telehealth in Acute Care: Pay Parity and Patient Access

Ozden Cakici, Assistant Professor, American University, United States

Alex Mills, Associate Professor, Baruch College, United States

Telehealth pay-parity policy requires payers to reimburse healthcare providers equally for telehealth and office visits. Using a three-stage game, we study the impact of telehealth reimbursement on provider's operational decisions, where patients choose between telehealth and office. We find that pay parity can decrease patient access and discuss its implications.

115-1214 Automated Data-Driven Modeling and Simulation of a Large Hospital Emergency Department (ED)

Dmitry Krass, Professor, University of Toronto, Canada

Opher Baron, Professor, University of Toronto, Canada

Arik Senderovich, Assistant Professor, York University, Canada

We seek to develop an automated data-driven simulation model of a large hospital ED in Toronto using event log data, process mining and queue mining techniques. Our particular interest is in evaluating the impact of consults. We find that while the first-order effects are relatively minor, the second-order effects are much stronger.

Contributed Session

400	Wednesday, 02:45 PM - 04:15 PM, Celebration 4	Track: Healthcare Operations Management
	Contributed Session: Telemedicine and E-visits	
	Chair(s): Yuqiong Jiang	

115-0006 Optimal Location of Remote Dental Units

Jong Youl Lee, Student, University of Rochester, United States

Balaraman Rajan, Associate Professor, California State University East Bay, United States

Abraham Seidmann, Professor, Boston University, United States

Remote dental units can address the gap in patient access by providing basic services to rural areas and issuing follow-up e-referrals for complex services. By combining location optimization with follow-up e-referrals for complex care, we demonstrate how technology can make a regional medical service for an underserved population economically sustainable.

115-0075 Free for consulting or not? Online health consulting services considering patient-generated information and system-generated information

Yuqiong Jiang, Student, Tianjin University, China

Zhaofang Mao, Professor, Tianjin University, China

Considering quality information asymmetry and waiting time information asymmetry between patients and the provider, we develop a two-stage queueing model to study the optimal service rate, price and the time of providing FOHCS to maximize either his revenue or total welfare.

115-0568 Tele-Follow-Up and Outpatient Care

Wednesday, 02:45 PM - 04:15 PM

Wei Gu, Associate Professor, University of Science and Technology Beijing, China

Meng Li, Associate Professor, University of Houston, United States

Shujing Sun, Assistant Professor, University of Texas at Dallas, United States

We examine the impact of telemedicine on follow-up care by collaborating with a large Asian hospital. We find that the adoption of telemedicine significantly increases the follow-up volume and it generates positive spillover effects on onsite operations. We further examine the mechanisms underlying these effects.

115-1369 Pooling physical and virtual services with application to telehealth

Omer Berk Olmez, Student, CUNY, Baruch College, United States

Alex Mills, Associate Professor, Baruch College, United States

Healthcare services can be offered both in-person and virtually by the same providers. We study a clinic's decision of whether to pool and how to prioritize the two modes of care, in the case where patients decide between physical and virtual care while observing the waiting time for both modes.

Invited Session

401	Wednesday, 02:45 PM - 04:15 PM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Methods for Learning from Healthcare Data	
	Chair(s): Shannon Harris	

115-0299 Impact of Social Determinants of Health on Cancer Care: A Predictive Model

Suman Niranjani, Assistant Professor, University of North Texas, United States

Chan Shen, Associate Professor, Penn State University, United States

Russell Torres, Assistant Professor, University of North Texas, United States

Usha Sambamoorthi, Professor, University of North Texas - HSC, United States

Abhinandan Chowdhury, Associate Professor, Savannah State University, United States

The study is focused on developing a prognostic model to predict cancer care for patients aged 60 years and above living in USA. We focus on breast, lung and bronchus, prostate, and colorectal. Supervised machine learning models are used to analyze a large medicare dataset from United States.

115-0772 Identifying Influential Individuals and Predicting Future Demand of Chronically Ill Patients.

Zlatana Nenova, Assistant Professor, University of Denver, United States

Valerie Bartelt, Assistant Professor, University of Denver, United States

We develop and evaluate a generalizable modeling framework that utilizes LDA and clustering models, identifies high impact and stable-demand customers, and predicts the medium-term demand for services of stable-demand customers. We also use statistical tools to examine the impact of every predictor on the LDA prediction quality.

115-1267 Optimizing the Return from a Machine Learning Model when Resources are Constrained

Jerrold May, Professor, University of Pittsburgh, United States

Johnson Moore, Post Doc/Researcher, University of Pittsburgh, United States

Luis Vargas, Professor, University of Pittsburgh, United States

Shannon Harris, Assistant Professor, Virginia Commonwealth University, United States

We propose a new methodology to address the problem of producing a ranking of observations, e.g., patients, when it is important that the ranking be particularly accurate near the top of the list. We illustrate our model using data from a healthcare clinic.

Invited Session

402	Wednesday, 02:45 PM - 04:15 PM, Celebration 6	Track: Healthcare Analytics
	Invited Session: Analytics for Healthcare	
	Chair(s): Guang Cheng	

115-0605 The Impact of Release Times for Operating Rooms on Surgery Waiting Times

Guang Cheng, Student, National University of Singapore, Singapore

Mitchell Tsai, Associate Professor, University of Vermont, United States

Joel Goh, Associate Professor, NUS Business School, Singapore

In this study, we empirically evaluate the relationship between implementing a 7-day release policy in operating room and surgery waiting times. Our results show that a 7-day release policy can reduce surgery waiting times.

115-0984 Estimating Patient Health Transition From Data Censored by Treatment-effect-based Policies

Qian Luo, Assistant Professor, Xi'an JiaoTong-Liverpool University, Singapore

Hai Wang, Assistant Professor, Singapore Management University, Singapore

Zhichao Zheng, Associate Professor, Singapore Management University, Singapore

Haidong Luo, Assistant Director, National University Hospital, Singapore

Oon Ooi, Cardiothoracic surgeon, National University Hospital, Singapore

Treatment-effect-based policies leverage predictive information on patient health transitions for medical interventions. This significantly censors observed health transitions and subsequently distorts the estimation of transition probability matrices (TPMs). We propose a structural model to estimate TPMs from censored transition observations and show our estimators are consistent and asymptotically normally distributed.

Wednesday, 02:45 PM - 04:15 PM

115-1123 Cost-effectiveness Analysis for Lethal Ovitrap Network for Prevention and Control of Dengue Fever

Yvonne Zhu, Student, National University of Singapore, Singapore

Joel Aik, Director, National Environment Agency, Singapore

Shuzhen Sim, Director, National Environment Agency, Singapore

Joel Goh, Associate Professor, NUS Business School, Singapore

We evaluated the system-level cost-effectiveness of a network of lethal ovitraps for Dengue control. Benefits were modeled using an age-stratified multiple-infection epidemiological model and measured as reductions in disability-adjusted-life-years (DALYs). We estimated labor costs by modeling the workload needed for periodic maintenance of the traps via Traveling Salesmen Problems (TSPs).

Contributed Session

403

Wednesday, 02:45 PM - 04:15 PM, Celebration 7

Track: Sustainable Operations Management

Contributed Session: Socially Responsible Operations

Chair(s): Alexander Bloemer

115-0936 Mandatory disclosure of supply network maps: A blessing for sustainability but a curse for competitiveness?

Alexander Bloemer, Student, Technical University of Munich, Germany

Stefan Minner, Professor, Technical University of Munich, Germany

Mandatory disclosures of supplier lists to improve sustainability can reduce a brand's competitiveness as other brands can access proprietary supplier information. We analyze how asymmetric competitors react on demanded disclosure in their dynamic relationships to suppliers, considering relation flexibility and the resulting suppliers' efforts in sustainability.

115-1008 Safety in Lithium-ion Battery Circular Activities: Safe Return to a Sustainable World

Zhuowen Chen, Student, Worcester Polytechnic Institute, United States

Joseph Sarkis, Professor, Worcester Polytechnic Institute, United States

Yildizbasi Abdullah, Post Doc/Researcher, Worcester Polytechnic Institute, United States

Lithium-ion battery (LIB) End-of-life (EOL) management safety can disrupt circular practice. LIB safety risks and impacts in EOL management are evaluated using input from experts. A framework and research propositions are presented.

115-1858 Firm's Environmental Misconduct, CSR Reputation, and Liability of Foreignness

Stewart Miller, Professor, University of Texas at San Antonio, United States

Kefeng Xu, Professor, University of Texas at San Antonio, United States

Sarfraz Khan, Assistant Professor, University of Louisiana at Lafayette, United States

Lorraine Eden, Emeritus Professor, Texas A&M University College Station, United States

We develop a theoretical framework to examine local media coverage of CSR violations by domestic and foreign firms. We draw upon expectancy violation theory and ingroup-outgroup literature to examine how foreignness influences the likelihood of media coverage following environmental misconduct and moderates the effect of CSR reputation on media coverage.

115-2015 Retreat, Defend, or Attack? Optimal Investment Decisions in Green Technology under Competition

Osman Alp, Associate Professor, University of Calgary, Canada

Tarkan Tan, Professor, University of Zurich, Switzerland

Maximiliano Udenio, Associate Professor, KU Leuven, Belgium

We analyze a focal firm's optimal green investment strategy when there is uncertainty in green market potential and in the competitors' actions. The optimal policy composes of Retreat, Defend, and Attack strategies, one of which is optimal based on the problem parameters.

Contributed Session

404

Wednesday, 02:45 PM - 04:15 PM, Celebration 8

Track: Sustainable Operations Management

Contributed Session: Empirical Sustainable Operations

Chair(s): Kanwalroop Dhanda

115-1235 IMPACT OF POLLUTION IN THE PUBLIC LIGHTING SERVICE: CONTROLLING UNDESIRABLE OUTPUT

GEMMA PEREZ-LOPEZ, Associate Professor, University of Granada, Spain

JOSE-LUIS ZAFRA-GOMEZ, Professor, University of Granada, Spain

PABLO POVEDANO, Student, University of Granada, Spain

LORENA MARQUEZ, Student, University of Granada, Spain

The analysis of the efficiency in the provision of local public services must consider both perspectives: the economic and the environmental management. So, we analyze the public lighting service efficiency, controlling its undesirable output (lighting pollution). A DEA model was applied, for a sample of 2,817 Spanish municipalities for 2014-2020.

115-2107 The linkage between Environmental performance and supply chains pre and post-Covid

Kanwalroop Dhanda, Professor, Sacred Heart University, United States

Malik Mahfuja, Associate Professor, Sacred Heart University, United States

Wednesday, 02:45 PM - 04:15 PM

Our project will empirically analyze the linkages between environmental and supply chain performance pre and post-Covid. Data on the supply chain metrics and firm performance variables, such as inventory turnover, inventory-to-sales ratios, firm size, and leverage, will be extracted from Compustat and ESG indicators from the MSCI database.

115-2119 POMJ's contributions to Sustainability and the Sustainable Development Goals - SDGs

Carlos Parra, Assistant Professor, Florida International University, United States
Sushil Gupta, Professor, Florida International University, United States
Hossein Rikhtehgar Berenji, Assistant Professor, Pacific University, United States

This study analyzes 2280 articles published in POMJ from 1992 to 2022, 187 studies are deemed to meaningfully allude to the terms "sustainability" and/or "sustainable." These are examined to establish ways in which Sustainability and the Sustainable Development Goals have been addressed and advanced in POMJ.

115-2143 Corporate Sustainability Practices by banks in Pakistan and their Financial Performance

Musa Khan, Post Doc/Researcher, Jiangsu University, China

This study uses content analysis to examine how Corporate Sustainability Practices affect Pakistan's top publicly traded commercial banks' Financial Performance from 2011 to 2021. The study has many contributions and implication for different stakeholders such as academia, regulators, and corporate sustainability practitioners.

Contributed Session

405	Wednesday, 02:45 PM - 04:15 PM, Celebration 9	Track: Supply Chain Management
	Contributed Session: Supply Chain in Food and Health Care	
	Chair(s): Olushola Kolawole	

115-0407 Supply Chain Learning and Innovation to address Food wastage

Olushola Kolawole, Lecturer, Bradford University, United Kingdom

Supply chain learning (SCL) is one of the strategic methods of promoting innovation to solve organisational problems, particularly the problem of food waste & loss. However, there is limited research on how SCL can be a source of innovation to reduce FWL. In this research, we investigate how this can possible

115-1244 Illegal, Unreported, and Unregulated (IUU) Fishing Supply Chains: A Research Agenda

Orkun Baycik, Assistant Professor, Boston University, United States
Canan Gunes Corlu, Associate Professor, Boston University, United States
Alyssa Pierson, Assistant Professor, Boston University, United States
James Greg McDaniel, Associate Professor, Boston University, United States

Illegal, Unreported, and Unregulated fishing steals income from legal fishers, relies on human trafficking for labor, and fuels other illicit activities. Further, it destroys oceanic ecosystems, contributing to climate change. We provide a research agenda for OM/OR community focusing on research challenges and opportunities to address these problems.

115-1270 Exploring the critical criteria matching supply with demand for supplies in a public health emergency

YIZHUO ZHOU, Student, Tongji University, Germany
Axel Werwatz, Professor, Technische Universitat Berlin, Germany
Jianjun Zhang, Associate Professor, Tongji University, China

This paper collected 12 expert opinions from universities, government and medical enterprises in China and Germany. Using Grey-DEMATEL method, we analyzed the criteria for developing short-term measures, long-term strategies, and important strategies for emergency supply and demand matching in major epidemics when taking different control policies in different countries.

115-1672 Lean supply chain management (LSCM) in the Canadian agri-food sector: A multiple case study

Fernando Naranjo, Assistant Professor, Niagara University, United States
Larry Menor, Associate Professor, Ivey Business School, Western University, Canada
P. Fraser Johnson, Professor, Ivey Business School, Western University, Canada

This qualitative inquiry illustrates, from a middle-range theorizing standpoint, the workings and the underpinnings of a reconceptualization of LSCM based upon the contextual contingent alignment between lean performance objectives (contextual factor) and supply chain management challenges (contingent condition) in the selection of lean approaches (contingent event) by Canadian agri-food firms.

Invited Session

407	Wednesday, 02:45 PM - 04:15 PM, Celebration 11	Track: Manufacturing Operations
	Invited Session: Channel Management with Innovative Considerations	
	Chair(s): Xin Geng Xiaomeng Guo	

115-0462 Optimal Policies for Assembly Systems: Completing Rosling's Characterization

Shaokuan Chen, Lead Data Scientist, Kohl's Corporation, United States
Wei Chen, Associate Professor, University of Kansas, United States
Alp Muharremoglu, Research Scientist, Amazon.com, United States

Wednesday, 02:45 PM - 04:15 PM

Rosling (1989) studies an assembly system with stochastic demand. Under the condition that the initial state of the system is in "long-run balance," the optimal policy is characterized as a balanced echelon base-stock policy. For the same model, we characterize the optimal policy without this condition.

115-1382 A distribution-free solution to a multi-period inventory problem with perishable inventory and backlogged demand

Yun Zhou, Associate Professor, McMaster University, Canada

We consider a perishable inventory problem in which items only last for one period and unsatisfied demand is backlogged. Given limited knowledge of demand distribution and a service level constraint, we analyze the performance of a distribution-free solution resulting from a simple heuristic.

115-1613 Personalized pricing strategies in a distribution channel

Huiqi Guan, Assistant Professor, Fudan University, China

Xin Geng, Assistant Professor, University of Miami, United States

Haresh Gurnani, Professor, Wake Forest University, United States

We investigate the impact of the firms' setting personalized prices in a dyadic supply chain in presence of strategic consumers.

115-2064 Planning fallacy in online labor delivery

Kevin Hong, Professor, University of Miami, United States

Meng Li, Associate Professor, University of Houston, United States

Jason Wu, Post Doc/Researcher, University of Houston, United States

In this paper we seek to understand how workers may strategically promise their delivery time under planning fallacy, and how that may affect equilibrium delivery promise and impact different types of workers in online labor markets.

Invited Session

408	Wednesday, 02:45 PM - 04:15 PM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Invited Session: Panel: Publishing Humanitarian Operations and Crisis Management Research in POM Journal	
	Chair(s): Erica Gralla Felipe Aros-Vera	

115-2112 Panel: Publishing Humanitarian Operations and Crisis Management Research in POM Journal

Erica Gralla, Associate Professor, George Washington University, United States

Felipe Aros-Vera, Associate Professor, Ohio University, United States

Sushil Gupta, Professor, Florida International University, United States

Maria Besiou, Professor, Kuehne Logistics University, Germany

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

This panel will feature editors and authors from the Disaster Management department of POM Journal to discuss the publishing process and what makes papers stand out and have an impact.

Contributed Session

409	Wednesday, 02:45 PM - 04:15 PM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Logistics II	
	Chair(s): Shraddha Rana	

115-1070 Game theory and optimization for facilitating coordination in humanitarian operations: a systematic review

Ayesha Farooq, Student, Kansas State University, United States

Jessica Heier Stamm, Associate Professor, Kansas State University, United States

A coordinated response from multiple entities engaged in humanitarian operations can enable optimal utilization of limited resources leading to more efficient and effective actions. We present analysis from a systematic review which explores how game theory and optimization can facilitate coordination. We highlight current trends and identify gaps in literature

115-1595 Truckload Transportation Procurement for Disaster Relief Distribution

Shraddha Rana, Student, Massachusetts Institute of Technology, United States

Jarrod Goentzel, Senior Lecturer, Massachusetts Institute of Technology, United States

Chris Caplice, Post Doc/Researcher, Massachusetts Institute of Technology, United States

During disasters, both private and public sector actors engage in relief distribution. However, disaster conditions and competition for the same resources can make transportation procurement challenging. We use causal inference to determine the effects of disasters and public sector relief activities on private sector truckload prices to motivate collaboration.

115-1640 Using agent-based simulation to evaluate the effect of different supply patterns on social costs

Feizar Rueda-Velasco, Associate Professor, Universidad Distrital Francisco José de, Colombia

Miguel Jaller, Associate Professor, University of California Davis, United States

Eduyn López, Assistant Professor, Universidad Distrital Francisco José de, Colombia

This study developed an agent-based last-mile distribution model to evaluate the performance (e.g., social costs) of relief distribution strategies under various supply arrival patterns in a case study region in Colombia. Results show a larger negative impact from the timing of supply arrival than supply quantities.

Wednesday, 02:45 PM - 04:15 PM

115-1950 Proactive and reactive response to seasonal natural disasters

Raktim Pal, Professor, James Madison University, United States

Santosh Mahapatra, Professor, Clarkson University, United States

We investigate the distinctive aspects of proactive and reactive inventory planning and replenishment in a multi-echelon operational system for meeting the relief demand due to recurrent, natural disasters in a season. The study compares the performance consequences against those of the traditional inventory planning and replenishment systems.

Contributed Session

410

Wednesday, 02:45 PM - 04:15 PM, Celebration 14

Track: Service Operations

Contributed Session: On-Demand/Platform Economy

Chair(s): Yanlu Zhao

115-0358 Stochastic Scheduling and Routing Decisions in Online Meal Delivery Platforms with Mixed Force

Yanlu Zhao, Assistant Professor, Durham University, United Kingdom

Laurent Alfandari, Professor, ESSEC Business School, France

Claudia Archetti, Professor, ESSEC Business School, France

This paper investigates stochastic scheduling and routing problems in the online meal delivery (OMD) service. We model the problem as a Markov Decision Process (MDP) and analyze the structural properties of the optimal policy. Then we propose four integrated approaches to solve the operational level scheduling and routing problem.

115-0396 On-Demand or Reservation? Service Mechanisms Exploration in Car-Hailing Platforms

Guangwen Kong, Associate Professor, Temple University, United States

Qingxia Kong, Associate Professor, Erasmus University Rotterdam, Netherlands

Yunan Liu, Associate Professor, North Carolina State University, United States

Ke Sun, Assistant Professor, Beijing University of Chemical Technology, China

Rui Zhu, Student, Shandong University, China

This paper considers a group of customers with heterogeneous waiting time costs and two service mechanisms: service on demand and service on reservation. We develop a queueing-game theory model to study the optimal pricing strategy and compare the performance of the two mechanisms.

115-0690 Information Provision in Online Service Platforms

Xin Weng, Student, Tsinghua University, China

Li Xiao, Assistant Professor, Tsinghua University, China

Lijian Lu, Assistant Professor, Hong Kong University of Science and Technology, China

We study the impact of wait time information distortion on customer join decision and the service provider's revenue in virtual queues. We show that the optimal revenue is first increasing and then decreasing in the distortion level. Customer joining rate could be either increasing or decreasing in the distortion level.

115-0711 Subscription vs. Spot Pricing in On-Demand Economy

Ming Hu, Professor, University of Toronto, Canada

Zhoupeng (Jack) Zhang, Student, Rotman School of Management, Canada

Taojie Qin, Student, Southwestern University of Finance and Economics, China

We study subscription and spot pricing in on-demand economy. Unlike subscription, spot pricing empowers the platform owner to dynamically control congestion and extract more consumer surplus, complementing the process of incentivizing gig workers and segmenting heterogeneous consumers. A hybrid pricing model, though, can yield higher profit than pure spot pricing.

Contributed Session

411

Wednesday, 02:45 PM - 04:15 PM, Celebration 15

Track: Information Systems and Operations Management

Contributed Session: Innovative models at the intersection of IS and OM

Chair(s): Karthik Kannan

115-0394 Cryptocurrency Rewards and Crowdsourcing Task Success

Shan Meng, Student, Xi'an Jiaotong University, China

Xia Zhao, Assistant Professor, University of Georgia, United States

Xi Zhao, Professor, Xi'an Jiaotong University, China

Crowdsourcing task success depends on the contributions from developers. This study investigates how the use of cryptocurrency token rewards affects the crowdsourcing task success and how the relationship depends on task features.

115-1444 Collaborative success in online communities: Explaining peer production performance in the 2022 R/place event

Shizhen Chen, Student, Emory University, United States

Tian Chan, Assistant Professor, Emory University, United States

Anandhi Bharadwaj, Professor, Emory University, United States

Wednesday, 02:45 PM - 04:15 PM

When can individuals within an online community work effectively together? We empirically investigate this question using Reddit's r/place event. We show that communities with members that share common (viz-a-viz divergent) interests, and have a hierarchical (viz-a-viz flat) communication structure, perform better. We also identify conditions where hierarchical communication perform worse.

115-1449 Building Robust Supply Chains through Digitalization. The role of IT-Enabled Dynamic Capabilities

Caleb Kumi, Student, Kwame Nkrumah University of Science and Technology, Ghana
David Asamoah, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana
Francis Baidoo, Associate Professor, University of Texas Rio Grande Valley, United States
Emmanuel Quansah, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana
John Marfo, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

In recent times, organizations across the global are faced with disruptions instigated by the COVID-19 pandemic. Consequently, the need to build robust supply chains is greater than ever. This study investigates how organizations can leverage supply chain digitalization to enhance supply chain robustness.

115-1850 Data Driven Decision Making in the Non-Profits Sector

Karthik Kannan, Assistant Professor, Southern Methodist University, United States

We analyze a quasi-experiment in which hundreds of non-profits arts organization in the US were provided with the training and tools to implement data driven decision making to improve their operations. We evaluate the impact of these tools using synthetic difference-in-differences methods.

Invited Session

412	Wednesday, 02:45 PM - 04:15 PM, Coral Spring 1	Track: Emerging Topics in Operations Management
	Invited Session: Emerging Topics in Operations Management	
	Chair(s): Samayita Guha	

115-0617 The Sweet Point of Resource Allocation among Innovators with Differentiated Successful Probability

Li tianjiao, Student, Temple University, United States
Subodha Kumar, Professor, Temple University, United States

Mounting new technology projects, tight product iterations, and innovation evidence has led firms to co-create with multiple innovators in differentiated projects. As allocating the same levels of resources to the differentiated innovators may undermines co-creation performance. We investigate how a profit-maximizing principal should properly allocate the limited resources.

115-0654 Optimal Subsidy Beneficiaries for Promoting Electric Vehicle Adoption

Bo Feng, Professor, Bussiness department, China
Jixin Zhao, Student, Department of Statistics, operations, and data science, United States
Max Shen, Professor, University of California Berkeley, United States

Governments worldwide are offering subsidies to promote electric vehicle adoption. However, the issue of identifying optimal beneficiaries remains inadequately addressed. In this paper, we develop a game-theoretic model to explore whom to subsidize (i.e., consumers, manufacturers, or both) to better realize intended objectives under different distribution channels.

115-1953 Examining the Role of AI in protecting Maritime Supply Chains from Cyberattacks

Rafael Diaz, Associate Professor, Old Dominion University, United States
Liuwang Kang, Post Doc/Researcher, University of Virginia, United States
Katherine Smith, Assistant Professor, Old Dominion University, United States

Digital transformation is playing a critical role in maritime supply chains. As autonomous vehicles are expected to become more prevalent in port operations, risks for disruptions due to a cyberattack are more significant. We propose an AI method for anomaly detection and mitigation

Invited Session

413	Wednesday, 02:45 PM - 04:15 PM, Coral Spring 2	Track: Elections and Political Management
	Invited Session: Political Management	
	Chair(s): Abhishek Ray	

115-0012 To Role of Online and Geographically Distant Social Networks in Political Decision-Making

Ecem Basak, Assistant Professor, Baruch College, United States
Ali Tafti, Associate Professor, University of Illinois at Chicago, United States
Min-Seok Pang, Associate Professor, Temple University, United States

In this study, we exploit Social Connectedness Index by Facebook that reflects social connections within the U.S., and we investigate the role of connectedness in political decision-making among individuals that are located across distant geographical regions. We also look at the heterogenous effects of social connectedness.

115-0014 Engagement by Enragement: The Economics of Online News

Abhishek Ray, Assistant Professor, George Mason University, United States
Hossein Ghasemkhani, Assistant Professor, Purdue University, United States
Cesar Martinelli, Professor, George Mason University, United States

Wednesday, 02:45 PM - 04:15 PM

We study online partisan news framing and consumption in light of polarization and non-partisan news websites. We propose a simple game-theoretic framework to shed light on this issue and reveal some interesting results. E.g., we show that polarization can act to limit engagement-enhancing strategies of both neutral and partisan websites.

Invited Session

414	Wednesday, 02:45 PM - 04:15 PM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Managing Uncertainty in Supply Chains	
	Chair(s): Charles Wang	

115-0275 The Role of Live-Streaming Commerce in a Dual-Channel Supply Chain

Haiying Yang, Assistant Professor, Missouri State University, United States

Zhengping Wu, Associate Professor, Syracuse University, United States

Zhuang Qian, Assistant Professor, Pennsylvania State University, United States

Live-streaming commerce is gaining popularity in recent years which provides an immersive and interactive shopping experience. This research explores different strategies of adopting live-streaming channel and its influence on supply chain optimization.

115-1056 FIRM PERFORMANCE AND BUSINESS UNCERTAINTY WITH SUSTAINABILITY PRACTICES

Yabing Zhao, Associate Professor, San Francisco State University, United States

Zhuang Qian, Assistant Professor, Pennsylvania State University, United States

Many firms have implemented various sustainability practices nowadays to take on social responsibility and adapt to modern business and economy. In this study, we aim to uncover the role of firms' sustainability practices and initiatives by examining firms' performance and business uncertainty after implementing sustainability practices.

115-1164 Revenue Management, Loyalty Program, and Online Travel Agency in Hotel Chains

SHUXIAN XIAO, Student, University at Buffalo, SUNY, United States

Charles Wang, Associate Professor, Suny At Buffalo, United States

Mike Wei, Associate Professor, University at Buffalo, United States

We consider a dual-channel supply chain consisting of a hotel and an OTA selling rooms to rational consumers. We identified consumers' segmentation, the OTA's optimal price, and the Hotel's optimal retail and wholesale prices and Gold-Status threshold. We showed that adding the OTA channel can benefit the hotel's performance.

Invited Session

415	Wednesday, 02:45 PM - 04:15 PM, Blue Spring 2	Track: Supply Chain Risk Management
	Invited Session: Organizational Misconduct	
	Chair(s): Rachna Shah Finn Petersen	

115-1326 Improving Inspection Resource Allocation to Mitigate Organizational Misconduct

Finn Petersen, Student, University of Minnesota, United States

Rachna Shah, Professor, University of Minnesota, United States

Researchers have started to predict organizational misconduct using public information. Yet, most social-control agents still only schedule inspections at regular intervals. We develop and empirically test a resource allocation model that incorporates decay in operational routines and Yelp reviews to optimally allocate inspection resources to detect health violations in restaurants.

115-1364 Data Driven Security Selection for Wealth Management

Sikun Xu, Student, Washington University in St. Louis, United States

Ali Hirsra, Professor, Columbia University, United States

Miao Wang, Student, Columbia University, United States

Federico Klinkert, ASK2.AI, ASK2.AI, United States

Satyan Malhotra, ASK2.AI, ASK2.AI, United States

We propose an artificial intelligence-powered portfolio decision system for financial investments. In this paper we focus on utilizing online learning and regime-detection tools to improve mutual fund performance forecasts. Combining with modern machine learning models, we are able to provide robust investment decisions.

115-1693 Illicit Distribution and Safety Implications: Misconduct in Opioid Supply Networks

Rowan Hilend, Student, Michigan State University, United States

Simone Peinkofer, Assistant Professor, Michigan State University, United States

Stan Griffis, Professor, Michigan State University, United States

The opioid epidemic remains a pervasive national issue with notable risks to stakeholder safety and relatedly, firm reputation. We leverage panel data to investigate the relationship between overdose rates and opioid manufacturer/distributor propensity to oversupply as a form of normal misconduct, considering external factors which exacerbate this distribution practice.

Wednesday, 02:45 PM - 04:15 PM

Invited Session

417	Wednesday, 02:45 PM - 04:15 PM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Achieving Service Operational Excellence	
	Chair(s): Peter Carrera Kenneth Boyer	

115-0157 Order-Based Trade Credits and Operational Performance in the Nanostore Retail Channel

Rafael Escamilla, Student, Tilburg University, Netherlands
Jan Fransoo, Professor, Tilburg University, Netherlands
Santiago Gallino, Assistant Professor, The Wharton School, United States

The suppliers of 50 million nanostores face operational challenges as a result of nanostore shopkeepers' financial constraints. We empirically investigate a short-term trade credit policy that can resolve these challenges but comes with substantial default risk. We uncover the operational benefits and quantify the risk associated with this new policy.

115-0230 Human-AI teaming in screening child abuse reports

Yanhan (Savannah) Tang Tang, Student, Carnegie Mellon University, United States
Zoey Jiang, Assistant Professor, Carnegie Mellon University, United States
Alan Scheller-Wolf, Professor, Carnegie Mellon University, United States

Governmental offices dedicated to protecting children from abuse and neglect usually receive an overwhelming number of reports and must carefully screen calls before sending staff to investigate. An AI tool was deployed to assist screening by providing risk scores; this project studies the effect of AI in improving operations performance.

115-0365 The Value of Offering Free Ship-to-store Service for Online-exclusive Products

Yao Chen, Student, Clemson University, United States
M. Serkan Akturk, Assistant Professor, Clemson University, United States
Benjamin Grant, Assistant Professor, Clemson University, United States

Implementing free in-store pickup services has become widespread in retail industry as part of an omni-channel strategy. We analytically model the setting of free ship-to-store services for online-exclusive products. Our prescriptive models enable retailers to evaluate the value of offering such service along with expected customer purchase behavior after implementation.

115-0375 Integrating Different Operational Policies in Robotic Mobile Fulfillment Systems

Kerim Kizil, Student, Texas A&M University, United States
Jon Stauffer, Assistant Professor, Mays Business School, Texas A&M University, United States
Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

We analyze a general Robotic Mobile Fulfillment (RMF) system characterized by human pickers, a robot fleet, and movable shelving pods. We outline and investigate three operations within this system: stowing, storing, and picking. Common operational policies are presented, and the interactions are explored both analytically and through discrete-event simulations.

Contributed Session

418	Wednesday, 02:45 PM - 04:15 PM, Barrel Spring 1	Track: POM-Marketing Interface
	Contributed Session: Live Streaming and Gaming	
	Chair(s): Liu Ming	

115-0712 Influencing the Influencer with Influencer Encroachment

Luying Wang, Student, Tianjin University, China
Yuyang Zhao, Student, Nanjing university of science and technology, China
Yunchuan Liu, Associate Professor, University of Illinois Urbana-Champaign, United States

We study the effects of influencer encroachment on marketer engagement through word of mouth. An influencer encroaches on a seller's market by selling substitute a product to followers. Influencer also posts the seller's product review to followers and allows sponsorship from the seller for the seller's product promotion

115-1110 Why Do Gamers pay? The Interplay Among a Gamer's Behaviors and Optimal Marketing Campaign Planning

Ding Li, Assistant Professor, Nanjing University, China
Xue Yang, Professor, Nanjing University, China
De Liu, Associate Professor, University of Minnesota, United States

We propose a utility maximization framework to empirically study online gamers' decision-making process with multiple behavioral dimensions (e.g., play, pay, offline) where payment is not a premise for usage behaviors. Our derived joint model admits a gamer's time-varying enjoyment parameters. We further develop a Bayesian dynamic marketing planning tool.

Invited Session

419	Wednesday, 02:45 PM - 04:15 PM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Information Design and Platform Operations	
	Chair(s): Heng Zhang Yunduan Lin	

Wednesday, 02:45 PM - 04:15 PM

115-0128 Personalized Assortment Optimization under Consumer Choice Models with Local Network Effects

Tong Xie, Student, Booth School of Business, United States
Zizhuo Wang, Professor, Chinese Univ of Hong Kong (Shenzhen), China

We study the assortment optimization problem under the consumer choice model with localized network effects. We analyze it under star networks and show its NP-hardness. We propose the idea of “randomized assortments”. Under certain conditions, we prove that using a combination of two adjacent revenue-ordered assortments is optimal.

115-0622 Nonprogressive Diffusion on Social Networks: Approximation and Applications

Yunduan Lin, Student, University of California, Berkeley, United States
Heng Zhang, Assistant Professor, Arizona State University, United States
Renyu Zhang, Associate Professor, The Chinese University of Hong Kong, China
Max Shen, Professor, University of California Berkeley, United States

We propose a general model to characterize nonprogressive diffusion and develop a fixed-point approximation (FPA) scheme to characterize the limiting adoption on a social network. This approximation scheme admits both a theoretical guarantee and computational efficiency. We show that the maximal deviation diminishes as the network size and density increase.

115-1395 From Customer Data to Product Design: A Statistical Learning Framework

Mengxin Wang, Student, University of California Berkeley, United States
Meng Qi, Assistant Professor, Cornell University, United States
Max Shen, Professor, University of California Berkeley, United States

Product design has been an important problem in the marketing and operations management literature. We develop a structural estimation and optimization method for determining optimal product design given customer data. We analyze the statistical performance of our method and discuss guidelines for efficient data collection.

115-1871 Mediated Persuasion via Blockchain

Kimon Drakopoulos, Assistant Professor, University of Southern California, United States
Irene Lo, Assistant Professor, Stanford University, United States
Justin Mulvany, Student, University of Southern California, United States

We relax the commitment assumption of classic Bayesian Persuasion by allowing Sender to communicate with Receiver through a blockchain mediator that sends a costly message to Receiver given Sender's reported state of the world. Surprisingly, we show that costly blockchain mediation succeeds where free mediation fails.

Invited Session

420	Wednesday, 02:45 PM - 04:15 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Empirical Research in Behavioral Operations	
	Chair(s): Bing Bai	

115-0313 When Top-Down Meets Bottom-Up: How Governmental Devolution Affects Online Giving Behavior

Anqi Wu, Assistant Professor, Florida International University, United States
Aravinda Garimella, Assistant Professor, University of Illinois at Urbana Champaign, United States
Ramanath Subramanyam, Associate Professor, University of Illinois Urbana-Champaign, United States

Focusing on adequacy and equity in public education, this study examines how top-down efforts driven by policy makers interact with bottom-up efforts of online donors facilitated by crowdfunding platforms. We find simultaneous evidence of two contrasting donor tendencies following the announcement of a prominent recent devolution policy.

115-1136 Information and Bias Effects in Discretionary Pricing: Evidence from Pricing Experiments

Xinyu Shirley Liang, Student, University of Michigan Ann Arbor, United States
Yixin Iris Wang, Assistant Professor, University of Illinois Urbana-Champaign, United States
Jun Li, Associate Professor, University of Michigan - Ann Arbor, United States

Contradict to pricing theory that suggests that discretionary pricing improves performances, decision-makers are vulnerable to behavioral biases that lead to inaccurate demand estimation. We first analyze a field experiment and show that managers significantly increased prices, leading to revenue reduction. We further investigate the behavioral mechanisms with a lab experiment.

115-1350 Algorithmic Discrimination on E-Commerce Platforms: Evidence from JD.COM

Zihan Zhao, Student, Washington University in St. Louis, United States
Renyu Zhang, Associate Professor, The Chinese University of Hong Kong, China
Dennis Zhang, Associate Professor, Washington University in St. Louis, United States

E-commerce platforms that function as both marketplaces and retailers may abuse their dominating market power to discriminate against third-party sellers algorithmically. We develop an integrated modeling and empirical framework to identify the algorithmic discrimination against third-party sellers on a platform and uncover the underlying mechanism of algorithmic discrimination.

115-1642 The Impacts of Algorithmic Work Assignment on Fairness Perceptions and Productivity

Bing Bai, Student, Washington University in St. Louis, United States
Hengchen Dai, Associate Professor, University of California Los Angeles, United States
Dennis Zhang, Associate Professor, Washington University in St. Louis, United States
Fuqiang Zhang, Professor, Washington University St Louis, United States

Wednesday, 02:45 PM - 04:15 PM

We study how algorithmic (vs. human-based) task assignment processes change workers' fairness perceptions and productivity. In two field experiments where warehouse picking workers received tasks either from an algorithm or a human, we find that the algorithmic assignment process was perceived as fairer and yielded productivity gains.

Invited Session

421	Wednesday, 02:45 PM - 04:15 PM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Data-driven Algorithms in Sequential Decision Makings	
	Chair(s): Sentao Miao	

115-0163 Sequential Search with Acquisition Uncertainty

David Brown, Professor, Duke University, United States

Cagin Uru, Student, Duke University, United States

We study a variation of the classical Pandora's problem in which the availability and acquisition of alternatives are uncertain. We develop and study a class of take-it-or-leave-it threshold policies. We show that these threshold policies are asymptotically optimal and achieve a constant-factor guarantee of $1-1/e$.

115-0269 Online Learning for On-demand Vehicle sharing Networks with Pricing

Saif Benjaafar, Professor, University of Minnesota, United States

Xiangyu Gao, Assistant Professor, The Chinese University of Hong Kong, Hong Kong, China

Xiaobing Shen, Student, University of Minnesota, United States

Huanan Zhang, Assistant Professor, University of Colorado Boulder, United States

We consider the pricing decisions for on-demand vehicle sharing networks in an online learning setting. We use a search subroutine to approximately locate the price with a desired demand for each trip and estimate the gradient information at this price point. We develop an online learning algorithm with performance guarantees.

115-0502 Distributionally Robust Multilocation Newsvendor at Scale: A Scenario-Based Linear Programming Approach

Chenxi Li, Student, School of Management & Economics, China

Sheng Liu, Assistant Professor, Rotman School of Management, Canada

Wei Qi, Associate Professor, Tsinghua University Department of IE, China

Lun Ran, Professor, Beijing Institute of Technology, China

Aiqi Zhang, Post Doc/Researcher, University of Toronto, Canada

How should retailers and sellers distribute inventory across a large network of (potentially hundreds of) distribution centers? We study a distributionally robust multilocation newsvendor problem with a scenario-based approach, providing an accurate and scalable LP reformulation for general location settings and characterizing optimal inventory decision for a symmetric two-location problem.

115-1018 The Benefits of Delay to Online Decision-Making

Yaqi Xie, Student, University of Chicago, United States

Will Ma, Assistant Professor, Columbia University, United States

Linwei Xin, Associate Professor, University of Chicago, United States

To make better online decisions, one common practice is delaying irrevocable real-time decisions; however, decisions cannot be delayed forever. We study this fundamental trade-off and prove that the regret decays exponentially in the delay length. Both our theoretical and empirical results suggest that a little delay is all we need.

Contributed Session

422	Wednesday, 02:45 PM - 04:15 PM, Regency Ballroom O	Track: Retail Operations
	Contributed Session: Data-driven strategies in retail operations	
	Chair(s): Mario Chong	

115-0414 Wholesalers' DSS based on a hierarchical family basket and machine learning techniques applied in Colombia

Jhon Segura-Dorado, Student, Corporación Universitaria Comfacaucá - Unicomfacaucá, Colombia

Helmer Paz Orozco, Professor, Corporación Universitaria Comfacaucá, Colombia

Ana Luna, Professor, Universidad del Pacífico, Brazil

Mario Chong, Professor, Universidad del Pacífico, Brazil

Julio Castillo, Assistant Professor, Universidad del Pacífico, Peru

This research proposes a wholesaler's decision support system to maximize their value proposal considering product mix, market environment, and operative plan conditions. It uses hierarchical family baskets and machine learning techniques focusing on classification methods.

115-0529 Predictably Unpredictable: How Judgmental Forecasts and Machine Learning Predictions Complement Each Other

Devadrita Nair, Student, WHU - Otto Beisheim School of Management, Germany

Arnd Huchzermeier, Professor, WHU - Otto Beisheim School of Management, Germany

We present a seasonal demand forecast using machine learning methods in combination with expert forecasts and clickstream data. Judgmental forecasts prove to be instrumental as product innovation can be radical and market information is withheld until product launch. Hybrid models can improve the forecasts further.

Invited Session

423	Wednesday, 02:45 PM - 04:15 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Design of Platforms	
	Chair(s): Yumei He	

115-0649 You Should Diversify, but Why? Multi-Platform Social Media Strategy and E-Commerce Performance

Xiaoning Wang, Student, University of Pennsylvania, United States
 Yakov Bart, Associate Professor, Northeastern University, United States
 Serguei Netessine, Professor, The Wharton School, United States
 Lynn Wu, Associate Professor, University of Pennsylvania, United States

Using a panel dataset on e-commerce social media metrics and performance indicators, we find that holding other factors constant, companies adopting a more diversified social media strategy perform better than those using a more concentrated strategy, because a more diversified social media strategy is positively associated with greater purchase intentions.

115-0858 Implementing an AI Assistant to Boost Sales and Reduce Product Returns in Livestream Selling

Lingli Wang, Assistant Professor, Beijing university of post and telecommunications, China
 Yumei He, Assistant Professor, Tulane University, United States
 Jiandong Ding, Product Manager, Alibaba Group, China
 Ni Huang, Associate Professor, University of Miami Business School, United States

In partnership with the worldwide largest livestream selling platforms, we conduct a randomized field experiment wherein consumers in treatment group can interact with an AI-powered streamer assistant that recognizes consumers' potential needs and provides personalized services while consumers in control group cannot. We have detailed findings ready.

115-1496 The Dark Side of the Restaurant Guide: Effects on Multiple Consumer Expectations and Rating Behaviors

Hui Yang, Student, Fudan university, China
 Xianghua Lu, Professor, Fudan university, China
 Tian Lu, Assistant Professor, Arizona State University, United States

Based on expectation-related theories, we explored the effect of being listed in the guide (BLG) on consumers' rating intentions and rating scores. Moreover, we introduced the zone of tolerance framework to investigate the effect of BLG on consumers' adequate and desired expectations, consumers' complaint, compliment, and neutral rating behaviors.

Contributed Session

424	Wednesday, 02:45 PM - 04:15 PM, Silver Spring 1	Track: Data Science and Analytics
	Contributed Session: Data Analytics Methods and Applications	
	Chair(s): Sanjeev Bordoloi	

115-0277 Visualizing the Implicit Model Selection Tradeoff

Zezhen (Dawn) He, Student, University of Rochester, United States
 Yaron Shaposhnik, Assistant Professor, Simon Business School, United States

Empirical evidence suggests that often multiple predictive models attain competitive results while internally operating differently. This results in an implicit tradeoff in models' performance throughout the feature space, resolving of which requires new model selection tools. This work explores new methods for uncovering the implicit model selection tradeoff.

115-0776 Personalized inference for partial association: acknowledging heteroscedasticity and differentiating subpopulations

Jiawei Huang, Student, Carl H. Lindner College of Business, OBAIS Department, United States
 Dungan Liu, Associate Professor, Carl H. Lindner College of Business, OBAIS department, United States

To address 2 common issues in the social survey (1) ordinal scale and (2) small sample size. We developed a "surrogate" method which creates continuous representations for ordinal responses, then uses quantitative numbers or visualization plots to access partial association for subpopulations. We also achieved personalized inference through sample smoothing.

115-1120 Application of DEA in Performance Evaluation of Cricket Players

Sanjeev Bordoloi, Associate Professor, University of St. Thomas, United States

We applied Data Envelopment Analysis (DEA) technique to evaluate efficiency of cricket players by collecting data from Indian Premier League (IPL). Interpretation of both batsmen and bowlers performances was made based on DEA results to run scenario analyses to help players and teams improve their overall performance.

115-1777 A Novel, Expert-Augmented, Supervised Feature Selection Methodology

Meysam Rabiee, Assistant Professor, University of Colorado Denver, United States

In this work, we propose an extra layer to the traditional way of feature selection by including experts'(academics and practitioners) opinions on the selection of the features, a process we refer to as expert-augmented feature selection.

115-1982 A Survey on Text Mining in Indian Languages

Prabin Kumar Panigrahi, Professor, INDIAN INSTITUTE OF MANAGEMENT INDORE , India

Wednesday, 02:45 PM - 04:15 PM

Text mining in English language has been researched extensively in past. A large amount of textual data is available in Indian languages. In this paper, we survey the availability of existing resources, and tools for text mining, work done so far and various challenges of text mining in Indian languages.

Invited Session

426	Wednesday, 02:45 PM - 04:15 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Contemporary Topics in Innovation Management	
	Chair(s): Fabrizio Salvador	

115-1031 Peer Effects and Learning with New Technology

Deepanshi Bhardwaj, Student, UCL School of Management, United Kingdom

Bilal Gokpinar, Professor, University College London, United Kingdom

We investigate peer effects in a knowledge-intensive work setting with individual-based competitive incentives where service workers are introduced to a new technology. Using a granular data of 10 million transactions for 822 banking-service-workers, we find that workers with peers have lower error-rates as compared to those without peers.

115-1472 Poisoned Apples: How Project Team Experiential Diversity Impacts Project Performance and Voluntary Turnover

Yunfan Wang, Student, IE BUSINESS SCHOOL, Spain

Fabrizio Salvador, Professor, IE Business School, Spain

Emmanouil Avgerinos, Associate Professor, IE BUSINESS SCHOOL, Spain

Marco Caserta, Assistant Professor, IE BUSINESS SCHOOL, Spain

Joining a project team whose members have heterogeneous experiences presents a learning opportunity to its constituents, and hence can affect project performance. Yet it remains unclear how team experiential diversity impacts the retention of human capital. We investigate these questions using 814 project teams from a multinational consulting firm

115-2027 An Investigation of Abstraction and Traversals in Creative Problem-solving in IKEA Hacks

Shi-Ying Lim, Assistant Professor, National University of Singapore, Singapore

Tian Chan, Assistant Professor, Emory University, United States

Conceptualizing creative problem-solving as search, we theorize how individuals navigate between problem and solution spaces. Using a dataset of user-initiated IKEA hacks, we show that successful creative problem-solving involve: 1. starting with problems, 2. frequent traversal of problem-solution landscapes, 3. decreased persistence within landscapes and 4. ending with abstract solutions.

Invited Session

427	Wednesday, 02:45 PM - 04:15 PM, Winter Park 50	Track: Socially Responsible Operations
	Invited Session: Challenges of Responsible Operations and Supply Chain Management	
	Chair(s): Prashant Chintapalli	

115-0608 Vertical Channels with Manufacturer-Quality and Retailer-Effort Induced Demand in the Presence of Strategic Inventory

Abhishek Roy, Assistant Professor, Temple University, United States

Ganesh Balasubramanian, Assistant Professor, T A Pai Management Institute, MAHE, India

Existing literature on strategic inventory does not consider the effect of the effort exerted by the manufacturer and retailer to stimulate demand. We examine how strategic inventory affects the manufacturer's choice of quality, and the retailer's choice of selling effort, both of which influence the market demand and social welfare.

115-0693 Bad Lead Time: Negative Consequences of Long Waiting Time - Evidence from the Israeli Court

Shany Azaria, Student, Tel Aviv University, Israel

Noam Shamir, Assistant Professor, Tel Aviv University, Israel

This paper describes a data-driven approach to study negative operational consequences of congestion, demonstrated in court system environment. Using data from the Israeli court system, we try to econometrically estimate the effect of long waiting times, an outcome of congestion, on cost.

115-0714 Price and Quantity Promotions for Clearance Sales: Implications for Sustainability and Profitability

Arvind Sainathan, Associate Professor, NEOMA Business School, France

Fang Liu, Associate Professor, University of Chinese Academy of Sciences, China

We consider a retailer who does clearance pricing to sell off the excess inventory of a certain product. In this context, we compare quantity-based discounts with traditional price discounts. Specifically, we develop models to examine how these policies compare in terms of retailer's sustainability (product wastage) and her profitability.

115-1285 Index-Based Yield Protection for Smallholder Farmers

Kehan Lu, Student, Duke University Durham, United States

Jing-Sheng Song, Professor, Duke University Durham, United States

Can Zhang, Assistant Professor, Duke University, United States

Our research studies an innovative index-based yield protection offered by governments under which smallholder farmers are subsidized when a pre-determined index predicts a low yield level. We explore the optimal design and value of such index-based policy. We also study its performance with the existence of a price protection.

Wednesday, 02:45 PM - 04:15 PM

430

Wednesday, 04:30 PM - 06:00 PM, Celebration 1

Track: Agriculture and Food Supply Chains

Contributed Session: Food Processing and Foodservice

Chair(s): SACHIN KAMBLE

115-0122 Digital twin for manufacturing excellence in food processing industries

SACHIN KAMBLE, Professor, EDHEC Business School, France

Pratik Maheshwari, Assistant Professor, Indian Institute of Management Jammu, India

Digital Twin (DT) is a dynamic capability attracting significant attention from both practitioners and academia. DT technologies has potential use in food processing industries for performance improvement. We develop a DT and demonstrate the benefits using a implementation case study in a food processing company using simulation.

115-0201 Exploring Challenges to Street Food Safety Compliance in a Developing Economy

Abigail Adaku, Lecturer, University of Ghana, Ghana

Irene Egyir, Associate Professor, University of Ghana, Ghana

Cynthia Gadegbeku, Lecturer, University of Ghana, Ghana

Most street food safety risks are avoidable with vendors compliance to the stipulated regulations. How researchers and policymakers describe the challenges also affects how they address it. Using focus group discussions, this study provides an understanding of street food safety challenges. The key finding is vendors lack incentives to comply

115-0292 The dark- and bright- sides of supplier development in the agri-food industry: a SET perspective

Phuong Tran, Lecturer, University of Bristol Business School, United Kingdom

Matthew Gorton, Professor, Newcastle University, United Kingdom

Fred Lemke, Professor, Vlerick Business School, Belgium

Based on Social Exchange Theory, we conceptualise the outcomes of supplier development initiatives, validating our model based on data for the agri-food sector in Vietnam. Results indicate that supplier development initiatives concurrently lead to both positive and negative consequences and we explain the mediating role played by relational norms.

115-1823 The Impact of a Country's Logistics Performance on Food Insecurity

Camil Martinez, Professor, University of Los Andes, Colombia

Andrés Naranjo, Student, Universidad De Los Andes, Colombia

This is an empirical study using public data from FAO and World Bank to understand how the impact of the logistics performance of a country impacts the country's food insecurity percentage. The results have public policy implications. More detailed analysis is applied to Colombia.

115-1885 Ready, Steady, Sprint: From traditional foodservice to nimble-squad

Roula Michaelides, Reader, Manchester Metropolitan University, United Kingdom

Zenon Michaelides, Reader, Manchester Metropolitan University (MMU), United Kingdom

Santosh Maruti Salunkhe, Post Doc/Researcher, Manchester Metropolitan University (MMU), United Kingdom

Escalating energy costs, tightening profit-margins, unplanned distribution demands have made the foodservice-sector vulnerable to supply-chain fragility and limited their capability to innovate in times-of-crisis. Using data from a UK foodservice firm, this paper explores their agile-projectification journey as response to cultivate resilience

Invited Session

431

Wednesday, 04:30 PM - 06:00 PM, Celebration 2

Track: Energy and Natural Resource Management

Invited Session: Energy operations and climate change

Chair(s): Wei Qi Aiqi Zhang

115-0692 Toward Climate Resilient Cities: Robust Planning Against Extreme Rainfalls

Sheng Liu, Assistant Professor, Rotman School of Management, Canada

Wei Qi, Associate Professor, Tsinghua University Department of IE, China

Aiqi Zhang, Post Doc/Researcher, University of Toronto, Canada

We are experiencing prolonged and intensified rainfall in our cities due to climate change. Unfortunately, existing efforts for infrastructure design hardly meet the urgent need. Leveraging robust optimization techniques, this paper identifies the worst-case rainfall scenarios that cause greatest flooding losses and propose prescriptive solutions for optimal stormwater infrastructure designs.

115-0874 Slowly Varying Machine Learning for Energy Consumption Prediction

Vasileios Digalakis, Student, Massachusetts Institute of Technology, United States

Dimitris Bertsimas, Professor, MIT Operations Research Center, United States

We introduce the framework of slowly varying machine learning, whereby the model varies smoothly under some graph-based temporal or spatial structure, through application in energy consumption prediction. For sparse regression, we present theoretical advances for the underlying mixed-integer optimization problem. For decision trees, we address long-standing challenges concerning their stability.

115-1000 Behind the Meter Distributed Energy Resources: Arbitrage and Advantages

Aaron Heinrich, Student, Texas A&M University, United States

Wednesday, 04:30 PM - 06:00 PM

Trevor Hale, Professor, Texas A&M University, United States
Jennifer Blackhurst, Professor, University of Iowa, United States
Bill Anderson, Director, United States Navy, United States

The advent of behind-the-meter distributed energy resources enable researchers to develop various strategies aimed at leveraging them as means not only to reduce electric bills but also to drive them negative, viz., arbitrage. To catalyze progress in this emerging domain of OM research, we delineate a research taxonomy.

115-1248 Dynamic Valuation of A Battery with Performance Degradation

Joonho Bae, Student, University of Michigan - Ann Arbor, United States
Roman Kapuscinski, Professor, University of Michigan Ann Arbor, United States
John Silberholz, Assistant Professor, University of Michigan, United States

Quantifying the operating cost of a battery is a key challenge for economic profitability. This paper analytically studies the optimal dynamic policy under two types of battery performance degradation and shows that a huge portion of profits can be missed with the heuristics used in the practice/literature.

Invited Session

432	Wednesday, 04:30 PM - 06:00 PM, Celebration 3	Track: Healthcare Operations Management
	Invited Session: Empirical Healthcare Operations Management	
	Chair(s): Masoud Kamalahmadi	

115-0003 Empirical Analysis of Determinants of Patient Appointment Punctuality

Hedayat Alibeiki, Assistant Professor, California State University San Marcos, United States

Understanding the causes of patient unpunctuality can help better design the queuing systems and appointment arrival policies. This study aims to investigate the potential factors that may affect the patients' arrival time to their outpatient appointments.

115-0326 When Do People Switch Queues? An Empirical Study of Discretionary Queue Switching

Yina Li, Associate Professor, University of Science and Technology of China, China
Zhijian Cui, Professor, University of Science and Technology of China, China
Jiuchang Wei, Professor, University of Science and Technology of China, China

This study investigates the behavioral mechanisms driving queueer's switching decisions in a queueing system with the option of discretionary switching. Our results support the U-shaped relationship between examinees' tendency to switch and service progress. This relationship is steepened when more queueers ahead and when the time is round number.

115-1199 Improving Regularity of Care and Patient Outcomes: The Efficacy of Telemedicine Adoption.

Jane Iversen, Student, Ohio State University, United States
Aravind Chandrasekaran, Professor, Ohio State University, United States

This work examines the association between a wide adoption of virtual visits and regularity of care and health outcomes for patients. Additionally, we look at how a potential reduction in patient no-shows and appointment wait times, and an increase in visit frequencies, mediate that relationship.

Contributed Session

433	Wednesday, 04:30 PM - 06:00 PM, Celebration 4	Track: Healthcare Operations Management
	Contributed Session: Transportation and Logistics for Healthcare	
	Chair(s): Debadyuti Das	

115-0059 Optimizing Non-emergency Medical Transportation Service

Xing HE, Student, College of Business, Hong Kong, China
Shaochong Lin, Post Doc/Researcher, University of Hong Kong, Hong Kong, China
Yanzhi Li, Professor, City University of Hong Kong, Hong Kong, China
Yunqiang Yin, Professor, University of Electronic Science and Technology of China, China

Motivated by real challenges faced by a non-government organization in Hong Kong that provides transportation services for the disabled and elderly people, we study a selective dial-a-ride problem with uncertain traveling time and provided a new coherent risk index: the mean-variance risk index to deal with the uncertainty.

115-1357 The route to specialized healthcare: Heterogeneous fleet planning using simulation models

Joelle Cormier, Student, HEC Montréal, Canada
Valérie Bélanger, Associate Professor, HEC Montréal, Canada
Marie-Eve Rancourt, Associate Professor, HEC Montréal, Canada

Real data input and simulation modelling were used to determine the size and composition of a heterogeneous fleet of fixed-wing aircraft in Québec, Canada. The results offer concrete recommendations and sheds light on the key trade-offs in the strategic and operational functioning of an aerial interhospital evacuation service.

115-2095 Distribution Network Design in Public Health for Essential Medicines: An Investigation

Rahul Kumar, Student, University of Delhi, India
Debadyuti Das, Professor, University of Delhi, India

Wednesday, 04:30 PM - 06:00 PM

The present work involves investigating different modes of Public Health DistributionNetwork (PHDN) Design for essential medicines in two Indian States in terms of servicelevel, cost and carbon footprint. The findings reveal that different modes of PHDNs generateinteresting results in the three parameters which provide rich managerial insights.

Invited Session

434	Wednesday, 04:30 PM - 06:00 PM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Vaccination policies in pandemics	
	Chair(s): Miao Bai Cuihong Li	

115-0136 Optimal Vaccination Rollout Policy

Puyao Ge, Student, University of North Carolina at Chapel Hill, United States
Vidyadhar Kulkarni, Professor, University of North Carolina Chapel Hill, United States
Jayashankar Swaminathan, Professor, University of North Carolina Chapel Hill, United States

We consider how to schedule the release of limited vaccine supply to several distinct groups within a finite population with different utility for the vaccine. We obtain the structural results of the optimal policies and show that these policies are applicable to several other situations such as online sales.

115-0138 Optimal Scheduling and Capacity Planning of Two-Dose Vaccination Roll Out

Chaithanya Bandi, Associate Professor, National University of Singapore, Singapore
Yini Gao, Assistant Professor, Singapore Management University, Singapore
Rajeeva Moorthy, Post Doc/Researcher, National University of Singapore, Singapore
Kelvin Tan, Director of Future Systems Office, Other, Singapore
Chung-Piaw Teo, Professor, National University of Singapore, Singapore

Designing an effective COVID-19 vaccine rollout policy is pivotal to achieving a high vaccination rate. The paper presents operational frameworks to synchronize vaccine supply and demand for two-dose vaccination programs via appointment scheduling and vaccine center capacity planning. The frameworks are used to assist the Singapore Ministry of Health.

115-0713 First Dose or Second Dose? A Study of Vaccination Policy with Supply and Capacity Constraints

Miao Bai, Assistant Professor, University of Connecticut, United States
George Chen, Assistant Professor, London Business School, United Kingdom
Cuihong Li, Professor, University of Connecticut, United States

We study the problem of allocating limited vaccine supply over time between first-dose and second-dose usage with vaccine administration capacity constraints. Based on the stylized SIR model, our analytical and numerical results establish the value of strategic delay and prioritizing second-dose usage before switching to prioritizing first-dose usage.

Contributed Session

437	Wednesday, 04:30 PM - 06:00 PM, Celebration 8	Track: Sustainable Operations Management
	Contributed Session: Sustainable Transportation with Electric Vehicles and Beyond	
	Chair(s): QIDI WU	

115-0403 Location and capacity allocation model for the electric vehicle charging stations' network planning in UK

QIDI WU, Student, Durham University Business School, Great Britain
manish shukla, Assistant Professor, Duke University Durham, United Kingdom

To encourage the EV uptake by deploying the charging station system strategically, the facility location model of fast charging stations constructed in this study comprehensively considers various factors, such as charging demand, investment cost, EV owners' characteristics, and comprehensively reflects the problems of installing charging infrastructure.

115-0593 Modeling of Electric Vehicle Battery Degradation with Deep Learning

Yixin Zhao, Student, University of Florida, United States
Sara Behdad, Associate Professor, University of Florida, United States

Electric vehicle (EV) battery in-service status prediction is critical to prevent hazardous events. This paper presents the implementation of an LSTM-based approach to predict EV battery state of health and remaining useful life. The performance of the proposed model is compared with existing data-driven approaches.

115-2023 How to improve resale value retention ability of Internal Combustion Engine Vehicles? Evidence from CarGurus.com

Tiep Nguyen, Student, Greenwich Business School, United Kingdom
Li Zhou, Professor, Greenwich Business School, United Kingdom
Quang (James) Huy Duong, Lecturer, Greenwich Business School, United Kingdom

While electric vehicles are being promoted globally, Internal Combustion Engine Vehicles (ICEVs) will still be around for many decades. To minimise its environmental impacts, circular economy approaches such as physical lifetime extension are crucial. This research explores how manufacturers can extend ICEVs lifetime through improving their resale value retention ability.

Contributed Session**438**

Wednesday, 04:30 PM - 06:00 PM, Celebration 9

Track: Supply Chain Management

Contributed Session: **Supply Chain Network Design**

Chair(s): Mihalis Giannakis

115-1033 Designing Resilient Logistics Networks Using k-Shortest Paths

Onkar Kulkarni, Student, Georgia Institute of Technology, United States

Mathieu Dahan, Assistant Professor, Georgia Institute of Technology, United States

Benoit Montreuil, Professor, Georgia Institute of Technology, United States

We consider the problem of designing resilient logistics networks by selecting hub locations to minimize the total demand-weighted distance of the k-shortest paths between each origin-destination pair. We leverage its structure to devise tailored solution methodologies based on Benders decomposition and branch-and-price, which we test on large-scale real-world parcel-delivery networks.

115-1568 Value of Information Analysis for Supply Chain Network Design Under Uncertainty

Austin Saragih, Student, Massachusetts Institute of Technology, United States

Milena Janjevic, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Matthias Winkenbach, Assistant Professor, Massachusetts Institute of Technology, United States

Jarrod Goentzel, Senior Lecturer, Massachusetts Institute of Technology, United States

Gilberto Montibeller, Professor, Loughborough University, United Kingdom

We present a framework and implementation of value of information (VOI) analysis for supply chain network design (SCND) under uncertainty. Specifically, we formulate an optimal information gathering strategy for decision-makers to prioritize the crucial segments of their supply chain. Based on results, we show significant value in partial information gathering.

115-1938 Designing Reverse Supply Chain Networks with Returned Product Quality Control

Sahar Ebrahimi Bajgani, Student, Worcester Polytechnic Institute, United States

Sara Saberi, Assistant Professor, Worcester Polytechnic Institute, United States

Fuminori Toyasaki, Associate Professor, York University, Canada

Aiming to determine the minimum acceptable quality of returned products for remanufacturing in different pandemic scenarios, we propose a reverse supply chain model with collection, remanufacturing, and recycling centers. We also evaluate the impact of technology acquisition by remanufacturing centers considering possible information leakage and free riding impact accordingly.

115-2108 The Effect of Supply Chain Distance on Enterprise Innovation Output

Mihalis Giannakis, Professor, Audencia Business School, France

We show how supply chain distance negatively impacts the innovation output and how risk-taking and information asymmetry play a mediating role. We use panel data of Chinese A-share listed companies from 2009-2022. The effects are more profound in non-state-owned businesses, in SMEs, and where the supply chain concentration is high.

Contributed Session**439**

Wednesday, 04:30 PM - 06:00 PM, Celebration 10

Track: Supply Chain Management

Contributed Session: **Supply Chain and Digitization**

Chair(s): Sherwat Ibrahim

115-1229 The Impact of Digital Transformation on Triple-A Supply Chain Performance

Graça Silva, Assistant Professor, ISEG- University of Lisbon, Portugal

Paulo Gomes, Assistant Professor, Florida International University, United States

Analysis of data from manufacturing firms is used to test the mediating role of Triple-A capabilities (agility, adaptability, and alignment) on the relationship between Industry 4.0 and supply chain performance and resilience. Results reveal differentiated impacts of Industry 4.0 adoption on Triple-A capabilities and dimensions of supply chain performance.

115-1318 Re-inventing the Supply Chains through Digital Transformation

Orkun Baycik, Assistant Professor, Boston University, United States

Shimon Gowda, Supply Chain Consultant, N/A, India

This study summarizes the current trends in operations and supply chain management through literature review and industry collaborations. We present how organizations can start their digital transformation journey and make progress if already started. Survey responses from industry experts help understand the key benefits of this transformation for organizations.

115-1721 how does Digital Operations capability enhance supply chain value creation?

Nathaniel Boso, Professor, Kwame Nkrumah University of Science and Technology, Ghana

Henry Mensah, Professor, Kwame Nkrumah University of Science and Technology, Ghana

Dominic Essuman, Lecturer, Sheffield University, United Kingdom

Dorcas Nuerter, Senior Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

Grace Anansewaa Annan, Student, Kwame Nkrumah University of Science and Technology, Ghana

Wednesday, 04:30 PM - 06:00 PM

Empirical examinations of the relationship between Digital transformation and social value have been of interest to some researchers. Yet little is known about how such relationship manifest. This study develops a mediated moderated model to explain how digital transformation can be leveraged for social value creation.

115-1949 Digital Supply Chain: A Critical Review

Binshan Lin, Professor, Louisiana State University Shreveport, United States

This study uses bibliometric software to identify research hotspots, topic evolution paths, and digital supply chain development trends. The results are analyzed and the evolution of the digital supply chain study follows incubation, exploration, and transition stages. Managerial implications and future research opportunities will be presented as well.

Invited Session

440

Wednesday, 04:30 PM - 06:00 PM, Celebration 11

Track: Manufacturing Operations

Invited Session: Platform Economics

Chair(s): Shivam Gupta Like Bu

115-0046 Procurement for Assembly Systems under Disruption Risk: Optimal Mechanisms

Like Bu, Student, University of Texas at Dallas, United States

Milind Dawande, Professor, University of Texas Dallas, United States

Ganesh Janakiraman, Professor, University of Texas Dallas, United States

A manufacturer procures the components of an assembly system. For each component, the buyer has access to a supplier whose production cost is private, input effort is unobservable, and production yield is uncertain. We develop an optimal mechanism and offer practically convenient screening implementations of our optimal mechanism.

115-1197 Social Learning With Polarized Preferences On Content Platforms

Dongwook Shin, Assistant Professor, Hong Kong University of Science and Technology, Hong Kong, China

Bharadwaj Kadiyala, Assistant Professor, University of Utah, United States

Several socioeconomic and political issues attract polarizing beliefs in the society. We study the impact of such beliefs on content consumption and production on a platform. We find a social learning (SL) mechanism can mislead consumers to incorrectly perceive low-quality content to be of higher quality and investigate its implications.

115-1290 Could the implementation of Additive Manufacturing mitigate the trade-off between lean and agile practices?

Di Li, Senior Lecturer, University of Warwick, United Kingdom

Ruoqi Geng, Senior Lecturer, Cardiff Business School, United Kingdom

Linan Luo, Student, University of Warwick, United Kingdom

John Bancroft, Senior Lecturer, Oxford Brookes University, United Kingdom

Additive Manufacturing has been widely implemented in industries and argued to could revolute the manufacturing process and system for positive impacts. This paper aims to investigate whether the Additive Manufacturing implementation could mitigate the trade-off between lean and agile practices, to simultaneously improve both of them and ultimately enhance performances.

115-1632 Minimum Wage Regulation in Ride-Hailing Platforms: Unintended Spatial Equity Consequences

Harish Guda, Assistant Professor, Arizona State University, United States

Ashish Kabra, Assistant Professor, University of Maryland, United States

Several large cities have proposed various regulations to improve the effective pay for drivers on ride-hailing platforms. Of these, the most popular form of regulation is a utilization-adjusted minimum wage. We analyze the implications of such a minimum wage in a spatially-dispersed market.

Contributed Session

441

Wednesday, 04:30 PM - 06:00 PM, Celebration 12

Track: Humanitarian Operations and Crisis Management

Contributed Session: Disaster Relief Orientation

Chair(s): Dehai Liu

115-0071 Topping modeling for generating knowledge

Mariana Moyano, Student, Universidad del Pacifico, Peru

Irineu Brito Jr, Professor, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil

Rafael Renteria, Assistant Professor, University of South Carolina Aiken, Colombia

Ana Luna, Professor, Universidad del Pacifico, Brazil

Mario Chong, Professor, Universidad del Pacifico, Brazil

This research analyzes more than 32,000 papers using topic modeling, an exploratory machine-learning technique. The results are nine main topics complemented with data visualization associated with a specific topic domain and present a novelty tool for the researcher to focus on the state-of-the-art and open the space to generate knowledge

115-1403 CONFIGURING SOCIAL-ECOLOGICAL RESOURCES OF HUMANITARIAN ORGANIZATIONS: WHEN DOES SUPPLY CHAIN COLLABORATION IMPROVE DISASTER RESPONSIVENESS

PRISCILLA ADDO ASAMANY, Student, KNUST SCHOOL OF BUSINESS, Ghana

Wednesday, 04:30 PM - 06:00 PM

The contingency and social perspectives of the Resource Based View (RBV) theory is used to argue that similarity to ideal configuration of social-ecological resources greatly contributes to disaster responsiveness of Humanitarian organizations and that at different levels of Supply Chain Collaboration, the relationship is strengthened.

115-1520 How to Alleviate the Double Water Crisis of Drought-flood Disaster and Pollution in Transnational River

Dehai Liu, Professor, Dongbei University of Finance and Economics, China

Ruirui Chai, Assistant Professor, North China University of Water Resources and Electric Power, China

To effectively alleviate the above double water crisis with the long-term, dynamic and seasonal characteristics, we propose a differential game framework of the water resources crisis management between the upstream and the downstream countries, and then discuss a real-world case of Lancang-Mekong River Basin. We solve the optimal seasonal allocation.

115-1715 Panic Buying behavior analysis according to consumer income and product type during the pandemic

Irineu Brito Jr, Professor, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil

Flaviane Saraiva, Student, University of Sao Paulo, Brazil

Nathan Bruno, Student, Universidade Estadual Paulista Julio De Mesquita Filho - Unesp, Brazil

Celso Hino, Post Doc/Researcher, São Paulo University, Brazil

Roberto Fray Da Silva, Post Doc/Researcher, Universidade De Sao Paulo, Brazil

Just before measures, such as social distancing, quarantine, lockdowns, and internal movement restrictions, people began to buy in panic. This study shows that sales before, during, and after the panic buying period vary according to the product type and increase according to the average per capita income of the region.

Contributed Session

442	Wednesday, 04:30 PM - 06:00 PM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Funding	
	Chair(s): Tharcisio Fontainha	

115-0816 Humanitarian donors' fund allocation decision: impact of uncertainty, risk-aversion and intermediary bias

Bengisu Urlu, Student, INSEAD, France

Atalay Atas, Professor, INSEAD, France

Antoine Desir, Assistant Professor, INSEAD, France

Luk Van Wassenhove, Professor, INSEAD, France

Donors exhibit risk-aversion in funding humanitarian organizations (HOs) due to lack of information about the capabilities of HOs on the ground. In turn, donations are funnelled through intermediaries (e.g. UN agencies) who possess better field information but may have biased-preferences. We explain how optimal fund allocation depends on these trade-offs

115-0826 Communities in the Crossfire: How Companies Can Do Well by Doing Good?

Andres Jola-Sanchez, Assistant Professor, Mays Business School, Texas A&M University, United States

Laura Turrini, Associate Professor, European Business School, Germany

Alfonso Pedraza, Professor, Indiana University, United States

We study how firms' social investments affect their operational performance and the ongoing conflict in war-torn regions. With data from Colombia's oil industry and a difference-in-differences analysis, we show that social investments boost firms' operating margins—especially in less conflict-intense areas—without increasing conflict intensity.

115-0933 Dynamic bargaining on endogenous earmarked donation proportion

Ning Zhao, Associate Professor, Dongbei University of Finance & Economics, China

Dehai Liu, Professor, Dongbei University of Finance and Economics, China

The paper puts forward two fundraising modes on earmarked donation: emergency management department unilateral decision making and negotiation with social forces respectively. The result shows that Whether government departments need to negotiate to decide the proportion of earmarked donations depends on the time preference of both parties.

115-1013 Natural Disaster Insurance and Finance: challenges and opportunities for its adoption in the Brazilian context

Cassio Maduro, Student, Federal University of Rio De Janeiro, Brazil

Tharcisio Fontainha, Professor, Federal University of Rio De Janeiro, Brazil

Natural Disaster Insurance and Finance (DRIF) has great potential in disaster risk management. Thus, this research aims to analyze the opportunities and challenges of adopting DRIF. The case study considers World Bank and Brazilian stakeholders' perspectives, revealing the importance of engaging different stakeholders and technical methodologies for appropriate insurance pricing.

Contributed Session

443	Wednesday, 04:30 PM - 06:00 PM, Celebration 14	Track: Service Operations
	Contributed Session: Service Channels	
	Chair(s): Sajeev George	

115-0047 Omnichannel Solution Applied in Customer Service Channels of a Financial Institution in Brazil.

Gabriela de Paula Ribeiro, Lecturer, Universidade Presbiteriana Mackenzie, Brazil

Wednesday, 04:30 PM - 06:00 PM

ALEXANDRE CAPPELLOZZA, Assistant Professor, Mackenzie Presbyterian University, Brazil

This study presents a solution to the problem of low operational efficiency in the service channels of a relevant Brazilian financial institution. The initiative started the digital transformation of the organization's service channels and spread the institutional concern that all customers, regardless of the point of contact, experience successful journeys.

115-0624 Digitizing retail banking services: An empirical examination of the drivers and outcomes of digitization capability

Ting Cao, Assistant Professor, Niagara University, Canada
Murat Kristal, Associate Professor, York University, Canada
M Rungtusanatham, Professor, York University, Canada
Joy Field, Associate Professor, Boston College, United States

We study the digitization of retail banking services in retail banks and credit unions. We leverage the operations strategy framework and propose a theoretical model to examine the drivers and outcomes of elevating digitization capability. Both primary and secondary data are collected to test our model empirically.

115-1528 Understanding Ordering Patterns at Franchise Restaurants

Jaewoo Lee, Student, University of South Carolina, United States
Keith Skowronski, Associate Professor, University of South Carolina, United States
Joel Wooten, Associate Professor, University of South Carolina, United States
Sean Handley, Professor, University of South Carolina, United States

In this study, we investigate the inventory ordering patterns of restaurant franchisees using a proprietary dataset. We study the heterogeneity in ordering patterns across franchisee locations to understand drivers of overage and underage costs for a key ingredient throughout the network of franchisees

115-1951 General and Health Insurance Service Providers of India: An Analysis of their Performance and Benchmarking

Sajeev George, Professor, S P Jain Inst. of Management & Research, India
Sapna Malya, Associate Professor, SPJIMR, India

This research study attempts to benchmark the performance of the major general and health insurance firms of India in the private sector. A Data Envelopment Analysis (DEA) approach is used to analyze the production, investment and capital allocation efficiencies of these firms to derive useful managerial and academic insights.

Contributed Session

444	Wednesday, 04:30 PM - 06:00 PM, Celebration 15	Track: Information Systems and Operations Management
	Contributed Session: Digital Economy	
	Chair(s): Anurag Tewari	

115-1142 Digital Governance in Healthcare Sector

Karuna Jain, Professor, Indian Institute of Technology Bombay, India
mahak sharma, Assistant Professor, BIMTECH, India

The study explores factors that impact digitalization governance in the healthcare sector. This study uses an integrated AHP-ISM-DEMATEL approach to find relative ranks, system actuators, and causality among the identified factors. "Data Privacy Risks" and "Government Policy and Regulations" are most critical impediments that also fall under the cause-effect group

115-1450 The Application of Digital Twins in Supply Chain Management

Xavier Brusset, Professor, SKEMA, France
Matthew Drake, Associate Professor, Duquesne University, United States
Dmitry Ivanov, Associate Professor, Berlin School of Economics and Law, Germany
Aseem Kinra, Associate Professor, Uni Bremen, Germany
Mehrdokht (Medo) Pournader, Senior Lecturer, Melbourne University, Australia

Organizations continue to develop innovative methods for helping managers to make data-driven decisions. Using analytical tools, digital twins powerfully enhance decision reach and outcomes. Based upon a review of literature, we present a framework through which operations management initiatives that account for human frailty and biases can be targeted.

115-1967 Virtual Factory Based Shop Floor Scheduling: An Application for a Semi Automated Manufacturing Environment

Anurag Tewari, Assistant Professor, University of Washington Bothell, United States
Aastha Sharma, MBA, Indian Institute of Management Ahmedabad, India
Aadish Jain, Partner, Shreyans Apparels, India
Pavan Godiawala, Professor, National Institute of Fashion Technology, Kharghar, Navi Mumbai, India

Virtual factory simulations are often used in manufacturing for resourcing and scheduling. However, these are difficult to implement in a semi-automated environment. By combining automated and non-automated process data for an apparel manufacturer, we demonstrate a novel statistical methodology to design and execute a digital twin that improves planning decisions.

Wednesday, 04:30 PM - 06:00 PM

Invited Session

445

Wednesday, 04:30 PM - 06:00 PM, Coral Spring 1

Track: Emerging Topics in Operations Management

Invited Session: Emerging Topics in Behavioral and Retail Operations

Chair(s): Chengzhang Li

115-0087 Help and Hagggle: Boosting Social Reach Through Randomized, Adaptive, All-or-Nothing Discounts

Chen Jin, Assistant Professor, National University of Singapore, Singapore

Luyi Yang, Assistant Professor, University of California Berkeley, United States

Zhen Shao, Student, University of Science and Technology of China, United States

This paper studies a novel social e-commerce practice known as "help-and-hagggle," we analyze help-and-hagggle using a dynamic game-theoretic model that captures randomized, adaptive and all-or-nothing these three features. "Help-and-Hagggle" can lead to a wider social reach, a lower promotion expense, and a higher profit from product sales.

115-0233 Venture Deals: Sources of Leverage in Entrepreneur-Investor Bargaining

Evgeny Kagan, Assistant Professor, Carey Business School, United States

Kyle Hyndman, Professor, University of Texas Dallas, United States

Anyan Qi, Assistant Professor, University of Texas Dallas, United States

We study equity division between an entrepreneur and one or more potential investors. The investor(s) and the entrepreneur negotiate how much equity (ownership) in the startup the investor(s) should receive in exchange for their investment.

115-0495 A Model of Livestream Selling with Online Influencers

Jing Hou, Student, Nanjing University, China

Houcai Shen, Professor, Nanjing University, China

Fasheng Xu, Assistant Professor, Syracuse University, United States

As the usage of livestreaming as a shopping channel skyrocketed during Covid-19 lockdowns, numerous brands started to leverage livestream selling to drive sales. We develop a game-theoretic model to investigate a firm's optimal livestream adoption strategies and implementation tactics and the implications of livestream adoption for influencers and consumers.

115-0808 Optimal Dynamic Mechanism under Customer Search

Zhenyu Hu, Associate Professor, National University of Singapore, Singapore

Yangge xiao, Student, NUS Business School, Singapore

We consider a seller's revenue maximizing problem in face of a customer who searches for outside alternatives over a finite horizon. We show that it is optimal for the seller to offer a menu of American options comprising of a menu of deposits and strike prices.

Contributed Session

446

Wednesday, 04:30 PM - 06:00 PM, Coral Spring 2

Track: Operational Excellence

Contributed Session: Operational Excellence in resource management

Chair(s): Manpreet Hora

115-0819 The effect of human resource allocation on knowledge intensive project performance

Antoaneta Momcheva, Assistant Professor, Stockholm School of Economics, Sweden

Fabrizio Salvador, Professor, IE Business School, Spain

Juan Madiedo, Associate Professor, Rotterdam School of Management, Netherlands

Front-loading has been shown to reduce risks and improve project performance. However, because of organizational constraints, front-loading is not always feasible. Using data from 253 R&D projects, we explore how different facets of familiarity of the project team supplement front-loading and ensure high performance, when the latter is limited.

115-1558 Multi-Treatment Forest Approach for Analyzing the Heterogeneous Effects

Minmin Zhang, Student, University of Texas at Dallas, United States

Guihua Wang, Assistant Professor, University of Texas Dallas, United States

Wallace Hopp, Professor, University of Michigan - Ann Arbor, United States

Michael Mathis, Assistant Professor, University of Michigan Medical School, United States

By applying a newly developed approach called "MT forest" to examine the effect of team familiarity on surgery duration in a clinical setting, we find the effect of team familiarity is heterogeneous across patients.

115-1596 Project Managers' Traits and Performance: A Quasi-Experiment

Vijaya Sunder M, Assistant Professor, Indian School of Business, India

Manpreet Hora, Associate Professor, Georgia Institute of Technology, United States

Collective project team identification, project outcomes and satisfaction among project team members are intrinsically related. However, these relationships vary with the project manager's characteristics like gender and origin (within or outside the firm). Through a quasi-experiment, we empirically examine these relationships in lean projects, a unique kind of short-duration micro-projects.

115-1745 Questioning Organizational Complexity: A Conceptual Framework for Scaling Operations

Wednesday, 04:30 PM - 06:00 PM

Wiljeana Glover, Associate Professor, Babson College, United States

Scaling organizations face increasing organizational complexity. Extending cognitive approaches to complexity, I explore how an organization's conceptualization of complexity influences their ability to adjust complexity sources, i.e., states (products and services) and interdependencies. I present a framework of alternative scaling mechanisms (data, proximity, and processes) that may minimize complexity.

Invited Session

447	Wednesday, 04:30 PM - 06:00 PM, Blue Spring 1	Track: Supply Chain Risk Management
	Invited Session: Nascent Initiatives and Innovations in iFORM	
	Chair(s): Xin Geng Guang Xiao	

115-0424 Coddle the Manufacturer or the Retailer: Government Loan Policy for Nascent Supply Chains

Jing Hou, Student, Nanjing University, China

Fasheng Xu, Assistant Professor, Syracuse University, United States

Omkar Palsule-Desai, Assistant Professor, Indian Institute of Management, Indore, India

Srinagesh Gavirneni, Professor, Cornell University, United States

In July 2021, the Government of India extended the scope of MSMEs (Micro, Small and Medium Enterprises) to encompass the retail and wholesale sector. This paper investigates how this government regulation change impacts the supply chain operations and profits, the government loss of capital, and the system welfare.

115-0629 E-Tailing with Instant Return Credit

Rong Li, Associate Professor, Syracuse University, United States

Duo Shi, Assistant Professor, The Chinese Univ of Hong Kong, Shenzhen, China

Instant return credit (in short, return-credit) is a new FinTech service that offers a store credit immediately upon a return claim, without requiring the return to be received. We study whether or not and how retailers should adopt return-credit.

115-0640 Innovation Against Imitation: Crowdfunding Strategy to Compete with Copycats

Zepeng Chen, Student, Hong Kong Polytechnic Univ, Hong Kong, China

Xiaomeng Guo, Associate Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Guang Xiao, Associate Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Fasheng Xu, Assistant Professor, Syracuse University, United States

Reward-based crowdfunding has experienced dramatic growth in recent years. However, crowdfunding is a double-edged sword. We employ a game-theoretical model where the startup can either choose the bank financing strategy and start the business activity without demand information or elect the crowdfunding strategy in the presence of potential imitation.

115-1386 Returnless refund in online retailing operations

Amin Shahmardan, Student, McMaster University, Canada

Mahmut Parlar, Professor, McMaster University, Canada

Yun Zhou, Associate Professor, McMaster University, Canada

With returnless refund, customers may receive a full refund without returning the product. We assume that a fixed price and that the retailer may (deterministically or probabilistically) allow returnless refund. We show that granting returnless refund probabilistically may outperform the strategy that grants it on a case-by-case basis.

Invited Session

448	Wednesday, 04:30 PM - 06:00 PM, Blue Spring 2	Track: Supply Chain Risk Management
	Invited Session: Emerging Topics in Supply Chain Management	
	Chair(s): Junghee Lee	

115-0035 Swift Knowledge Transfer: New Supplier Development during Disruption in Supply

Rebecca Clemons, Associate Professor, Indiana University, United States

Results from a case study of automotive supply chain firms seeks to understand how these firms managed unexpected disruption in the supply base causing a loss of production. Specifically, what methods of communication were used to share information and quickly build trust between buyer and supplier?

115-0700 Organizational learning from quality failure: product recalls and shortages

Hanu Tyagi, Student, University of Minnesota, United States

Junghee Lee, Assistant Professor, University of Notre Dame, United States

Rachna Shah, Associate Professor, University of Minnesota, United States

We explore the unintended consequences of quality failure operationalized as product recalls. Using publicly available secondary data, we explore the unintended consequences of product recalls on product shortages in the context of US pharmaceutical industry.

115-1696 Big Data Analytics Capabilities and Supply Chain Resilience: The Role of Risk Management Compliance Strategy.

Enoch Bulley, Student, Kwame Nkrumah University of Science and Technology, Ghana

Francis Baidoo, Associate Professor, University of Texas Rio Grande Valley, United States

David Asamoah, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana

Wednesday, 04:30 PM - 06:00 PM

John Marfo, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

Kwame Kwateng, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana

Resilience remains a topical issue amongst supply chains. Drawing on the dynamic capability theory, this study advances knowledge by examining the relationship between big data analytics capabilities and supply chain resilience. The findings demonstrate a positive mediation effect of risk management compliance strategy towards resilience in the big data environment.

115-1975 Designing public vaccine procurement contracts to increase the supply of vaccines

Hongmei Sun, Post Doc/Researcher, York University, Canada

Fuminori Toyasaki, Associate Professor, York University, Canada

We design the optimal public procurement contracts to achieve the socially optimal level of vaccine supply when facing essential operational challenges, such as the need to establish manufacturing capacity before and after regulatory approval, the demand uncertainties, and the nonlinear values of vaccines in reducing the total number of infections.

Invited Session

449	Wednesday, 04:30 PM - 06:00 PM, Rainbow Spring 1	Track: Empirical Research in Operations Management
	Invited Session: Network and Its Implications on Operations Excellence	
	Chair(s): Yingchao Lan	

115-0476 Social network analysis and product performance

Yi-Su Chen, Associate Professor, University of Michigan-Dearborn, United States

Yuhong Li, Assistant Professor, Old Dominion University, United States

Kedong Chen, Assistant Professor, Old Dominion University, United States

Social network analysis such as centrality has been applied to detect firm performances. In this study, we return to the roots by examining individual centrality measures and their impacts on performance, contextualized in the booming board game industry, projected to reach US\$3.13 billion in 2022. We discuss managerial insights.

115-0574 Restructuring the supply bases after M&As

Yang Yang, Associate Professor, University of Texas at El Paso, United States

Sangho Chae, Assistant Professor, Tilburg University, Netherlands

Tingting Yan, Associate Professor, Wayne State University, United States

Kevin Linderman, Professor, Penn State University, United States

While M&As cause initial changes in the firms' supply bases, how the supply bases continuously change after the M&As and how these changes affect the firms' operational excellence are largely unknown. This research provides some initial evidence to these research questions.

115-0646 The dark side of operational excellence in networks

Paul Skilton, Associate Professor, Washington State University, United States

Because operational excellence implies the integration of intra- and inter-organizational systems to reduce cost, waste and redundancy, it is inherently a network concept. This study examines the dark side of operational excellence in networks, including limitations on value creation, restrictions of knowledge flows and entrapment in local optima.

115-0975 Supply Network Complexity, Regulatory Risk and Firms' Engagement in Influencing Climate Change Policies

Zhenzhen Yan, Assistant Professor, Idaho State University, United States

Sriram Narayanan, Professor, Michigan State University, United States

Tobias Schoenherr, Professor, Michigan State University, United States

To enhance organizational legitimacy and competitive advantages, many firms have strived to go beyond policy compliance and engage in influencing the climate change policies (EICCP). Our research examines the regulatory risks associated with climate change and firms' supply network complexity as critical and interrelated factors for firms' EICCP.

Invited Session

450	Wednesday, 04:30 PM - 06:00 PM, Rainbow Spring 2	Track: Operational Excellence
	Invited Session: Achieving Non-Profit Operational Excellence	
	Chair(s): Yingru Han	

115-0115 Improving the Quality of In-kind Donations: A Natural Field Experiment

Sindy Pacheco, Director of Design & Data Analytics, The Society of Saint Vincent de Paul, Arizona, United States

Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States

Chao Wu, Student, Arizona State University, United States

While in-kind donations contribute to triple bottom line, low-quality items impose additional costs to sort, process, or discard them. Minimizing the amount of undesired donations is a challenge given charities' sensitive relationship with their donors. We used behavioral intervention to improve quality in a natural field experiment.

115-0652 Achieving Resilience to Disruptions in Food Banks through Redundancy Building

Luv Sharma, Associate Professor, University of South Carolina, United States

Yingru Han, Student, University of South Carolina, United States

Wednesday, 04:30 PM - 06:00 PM

Olga Perdikaki, Associate Professor, University of South Carolina, United States

Pelin Pekgun, Associate Professor, University of South Carolina, United States

In this study, we investigate the role of a critical operational factor in influencing the ramp-up in distributional capacity for food banks in the face of emergencies like the Covid-19 pandemic and help build resiliency in operations.

115-1835 Behavioral Responses To Nonprofit Performance Metrics: Efficiency Vs. Impact

Hasti Rahemi, Student, University of Colorado Boulder, United States

Gloria Urrea, Assistant Professor, University of Colorado Boulder, United States

Leon Valdes, Assistant Professor, University of Pittsburgh, United States

Among NPO performance metrics, the program spending ratio- the percentage of an NPO's expenditures that goes to its programs - is pervasive. However, heavily relying on PSR might do more harm than good. We study whether and how NPOs can use other metrics to reduce their reliance on PSR.

Invited Session

451

Wednesday, 04:30 PM - 06:00 PM, Barrel Spring 1

Track: POM-Marketing Interface

Invited Session: **Marketing and Operations Strategies in Compensation, Certification, Return, and Demand Manage**

Chair(s): Mabel C. Chou

115-1784 What Moves The Customers? Adoption of Self-service Technology in the Last Mile

Libo Sun, Post Doc/Researcher, University of Science and Technology of China & National University of Singapore, Singapore

Guodong Lyu, Assistant Professor, Hong Kong University of Science and Technology, China

Chung-Piaw Teo, Professor, National University of Singapore, Singapore

To comprehensively understand how customers can be nudged to adopt self-service parcel lockers, this paper empirically identifies two effects in this problem: exposure effect (how locker usage changes after a first trial) and popularity effect (how usage is influenced by the popularity of parcel lockers installed in the vicinity)

115-1791 Good Corp and Bad Corp: An Economic Analysis of Certification

Guowei Liu, Associate Professor, Hebei University of Technology, China

Jiong Sun, Associate Professor, Purdue University, United States

Jianxiong Zhang, Professor, Tianjin University, China

This paper investigates the economic impacts of certifying a new form of businesses that pursue a dual mission, profit and social good. We find that consumer heterogeneity has a non-monotonic impact on the firm's ability to separate itself from the conventional for-profit firm and that certification may hurt the consumer.

115-1855 Adopting buy online return in-store or not? Considering competing firms selling substitute products

Guiyang Zhu, Post Doc/Researcher, National University of Singapore, China

Mabel C. Chou, Associate Professor, National University of Singapore, Singapore

When a traditional retailer and an e-tailer sell substitute products and compete in price, we analyze whether and when these two retailers would collaborate to allow consumers to buy online and return in-store (i.e., BORS). We derive conditions under which BORS can increase demand and reduce return handling cost.

115-1872 Taming the Long Tail: Gambler's Fallacy in Intermittent Demand Management

Sheng Bi, Assistant Professor, Shanghai University of Finance and Economics, China

Long He, Assistant Professor, National University of Singapore, Singapore

Chung-Piaw Teo, Professor, National University of Singapore, Singapore

Our analysis is motivated by a recent interesting observation that gambler's fallacy holds in a finite number of coin tosses. We use it to analyze the inventory problem for intermittent demand to demonstrate that some classical models must bias the underlying demand distribution to account for the finite horizon.

Invited Session

452

Wednesday, 04:30 PM - 06:00 PM, Barrel Spring 2

Track: Procurement and Supplier Management

Invited Session: **Sourcing and Resilience Strategies in Pharmaceutical Supply Chains**

Chair(s): Jagjit Srani Ettore Settanni

115-0588 Serendipity of Sustainable Pharmaceutical Procurement: Finding Transparency When You Were Least Expecting It

Marianne Jahre, Professor, BI Norwegian Business School, Norway

Kim Van Oorschot, Professor, BI Norwegian Business School, Norway

Mikal S. Pettersen, , ,

Eirik Sverrisson, , ,

Wangen Andreas, , ,

Christine Årdal, Senior Adviser, Norwegian Institute of Public Health, Norway

The paper reports on one of the first attempts to use environmental criteria in procurement of pharmaceuticals and finds that applying such criteria not only improves the environmental dimension of sustainability, but also creates greater transparency, thereby allowing for proactive interventions to prevent shortages.

Wednesday, 04:30 PM - 06:00 PM

115-1778 How Do Drug Shortages Affect FDA's Drug Inspections? An Empirical Study

Ziheng (Archie) Zhuang, Student, Penn State University University Park, United States

In Joon Noh, Assistant Professor, Penn State University, United States

Hui Zhao, Associate Professor, Penn State University University Park, United States

Drug shortages have been a significant and persistent challenge in the U.S. Some drug manufacturers blame FDA for the production delay and resultant shortages, claiming that FDA's inspections tend to be unnecessarily stringent. Given these anecdotes, we empirically investigate the impact of drug shortages on FDA's drug inspections.

115-1882 B2B digital platform interventions in medicines supply chains: exploring the potential for value creation

Ettore Settanni, Post Doc/Researcher, University of Cambridge, United Kingdom

Jagjit Srail, Professor, University of Cambridge, United Kingdom

Nitin Joglekar, Associate Professor, Questrom School of Business, United States

We apply a recently proposed value creation lens to evaluate targeted B2B platform interventions in medicines supply chains. These interventions aim at: (1) facilitating interaction between medical device manufactures and direct-to-home healthcare providers; and (2) enabling the release by exception of inbound inventory within a highly regulated Quality Assurance process.

Invited Session

453	Wednesday, 04:30 PM - 06:00 PM, Rock Spring	Track: POM-Economics Interface
	Invited Session: Operations, Market(ing), and Economics	
	Chair(s): Haokun Du	

115-0429 Competitive Markovian Pricing

Haokun Du, Student, The University of Texas at Dallas, United States

Bin Hu, Associate Professor, Naveen Jindal School of Management, United States

Elena Katok, Professor, University of Texas Dallas, United States

Dynamic pricing is complicated by strategic revenue management. A remedy to it is Markovian pricing under monopolistic setting. We consider competitive Markovian pricing and show that competition may increase retailer profits and price-matching may decrease retailer profits. Further discussions on these counterintuitive results are given.

115-0849 Rollover under Subscription Programs

Jin Miao, Student, The University of Texas at Dallas, United States

Haokun Du, Student, The University of Texas at Dallas, United States

As subscription programs have become increasingly popular, retailers need to decide whether to allow unused amounts in one period to be rolled over to the next period. This study examines consumer inventory management, as well as the impact of rollover allowance on pricing, profits, consumer welfare and social welfare.

115-1173 Multidimensional Procurement Auction with Loss-Averse Workers in Online Labor Markets

Jason Wu, Post Doc/Researcher, University of Houston, United States

Shan Li, Assistant Professor, Baruch College, United States

Kay Yut Chen, Professor, University of Texas Arlington, United States

Service procurement auction involving multidimensional bids - typically a proposal and a price - are ubiquitous in online labor markets. Intuitively, loss aversion is important to our setting particularly. We study the impact of loss aversion and design mechanism to improve welfare under the effect of loss aversion.

115-1515 Inside the Subscription Box: Product Line Design with Consumer Habituation

Dawei Jian, Student, University of California Riverside, United States

The rise of personalized subscriptions transformed retail markets. How should a firm learn consumer's evolving tastes and personalize product offerings? We study this dynamic product line design problem where consumer's tastes are evolving stochastically driven by habituation. Our results explain rising popularities of personalized subscription and improve practices.

Invited Session

454	Wednesday, 04:30 PM - 06:00 PM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Invited Session: Recent Advances in Data-Driven Inventory and Revenue Management	
	Chair(s): Divya Singhvi	

115-1216 Learning Inventory Control Policies with Fixed Ordering Costs

Xiaoyu Fan, Student, New York University, United States

We study the multi-stage stochastic inventory control with fixed ordering costs under unknown demand distribution. We adopt sample average approximation to learn the optimal policy. We show that it only requires a polynomial-sized set of samples to obtain a provably near-optimal solution with high probability.

115-1323 End-to-End Learning for Optimization via Constraint-Enforcing Approximators

Rares Cristian, Student, Massachusetts Institute of Technology, United States

Pavithra Harsha, Research Staff Member, IBM, United States

Wednesday, 04:30 PM - 06:00 PM

Georgia Perakis, Professor, Massachusetts Institute of Technology, United States

Brian Quanz, Research Staff Member, IBM, United States

In many applications, including supply chain, predictions (for example, of demand) are used as inputs for downstream optimization tasks. An example includes determining a fulfillment strategy. We present a computationally efficient neural network architecture approximating solutions to such optimization problems letting us learn forecasts that minimize the final task-based objective.

Contributed Session

455	Wednesday, 04:30 PM - 06:00 PM, Regency Ballroom O	Track: Retail Operations
	Contributed Session: Multichannel and Store profitability	
	Chair(s): Christopher Mejia	

115-0801 In-store product planning of multichannel retailer with product-fit uncertainty and competition

Raunak Joshi, Student, Indian Institute of Management Calcutta, India

Sumanta Basu, Professor, Indian Institute of Management Calcutta, India

Sreelata Jonnalagedda, Associate Professor, Indian Institute of Management Bangalore, India

Balram Avittathur, Professor, Indian Institute of Management Calcutta, India

We address the problem of in-store assortment planning, service level determination and pricing when the product-fit is uncertain, and the multichannel retailer faces competition. The consumers have to decide whether to purchase based on online information or visit the store for verification, with uncertain product availability in store.

115-0925 Dynamic Labour Allocation to Increase Store Profitability

Shandong Mou, Assistant Professor, Central University of Finance And Economics, China

David Robb, Professor, University of Auckland, New Zealand

Aligning staff with changing customer and store needs is critical in retail store operation management. We propose a dynamic labour allocation framework and utilize approximate dynamic programming techniques to provide good forward-looking solutions. The effectiveness of the proposed solutions is validated using extensive computational experiments.

115-1410 The issue of consolidating customer orders in retail distribution centers: a multiple case study

JOAKIM KEMBRO, Associate Professor, Lund University, Sweden

Andreas Norrman, Professor, Lund University, Sweden

Ebba Eriksson, Post Doc/Researcher, Lund University, Sweden

As retail distribution centers are increasingly automated and grow in size to handle a wide range of products and flows, the issue of consolidating customer orders becomes critical. We investigate the consolidation issue through a multiple case study, offering both theoretical and practical insights on new technology, challenges, and solutions.

115-1771 Consumer preferences on retailers for the food purchase in Sabana Centro, Colombia.

AGATHA DA SILVA OVANDO, Student, Universidad de la Sabana, Bolivia

Gonzalo Mejia, Associate Professor, Universidad De La Sabana, Colombia

Christopher Mejia-Argueta, Assistant Professor, Massachusetts Institute of Technology, United States

This study aims to represent the discrete choice of households in the Sabana Centro region of Colombia when selecting their preferred retail format to purchase food. To this, we applied a structured survey at the region, and used georeferenced data of households and retailers to generate a nested logit model.

Invited Session

456	Wednesday, 04:30 PM - 06:00 PM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Invited Session: Platform Strategy	
	Chair(s): Yeongin Kim Geng Sun	

115-1947 Marketplace or Logistics Provider: Extended MFS Programs in Online Retailing

Geng Sun, Assistant Professor, University of Texas Rio Grande Valley, United States

Huseyin Cavusoglu, Associate Professor, University of Texas at Dallas, United States

Srinivasan Raghunathan, Professor, The University of Texas at Dallas, United States

We study the emerging phenomenon that online platforms expand their membership-based free shipping programs to merchants running their own e-commerce websites, as opposed to listing on the marketplaces. We find that the external MFS revenue may well compensate the internal commission loss, which makes the platforms better off overall.

115-1989 The Value of Blockchain Adoption in Social Media Platforms

Qiyuan Deng, Assistant Professor, Chinese Univ of Hong Kong (Shenzhen), China

Weilin Ye, Student, Chinese Univ of Hong Kong (Shenzhen), China

Chenglong Zhang, Assistant Professor, Chinese Univ of Hong Kong (Shenzhen), China

This study examines the implications of blockchain technology on piracy issues and compares it with traditional anti-piracy approaches. We identify when blockchain should be adopted and how it affects platforms, creators and second creators. Managerial implications are discussed.

115-2122 An Empirical Analysis of an Online Freelance Home Services Platform and Burglary

Wednesday, 04:30 PM - 06:00 PM

Doehun Kim, Student, Korea Advanced institute of Science and Technology, South Korea

Jiyong Park, Assistant Professor, The University of Georgia, United States

Chul Ho Lee, Assistant Professor, K A I S T, South Korea

Hangjung Zo, Professor, Korea Advanced institute of Science and Technology, South Korea

By exploiting a quasi-experimental setting of TaskRabbit's staggered entries into US cities, this study examines how an online freelance home services platform affects residential burglaries in the service locale. Our findings demonstrate that TaskRabbit's entry is negatively associated with the residential burglaries, particularly during the day rather than at night.

Invited Session

457	Wednesday, 04:30 PM - 06:00 PM, Silver Spring 1	Track: Data Science and Analytics
	Invited Session: Applications of Data Driven Modeling in Marketing and Operations	
	Chair(s): Sajeesh Sajeesh	

115-2081 : Using Text Analysis in Parallel Mediation Analysis

Judy Zhang, Student, Ohio State University, United States

Hongshuang (Alice) Li, Associate Professor, The Ohio State University, United States

Greg Allenby, Professor, Ohio State University, United States

Text data is widely used in marketing research. In this paper, we propose a model that use text data to identify multiple mediators in a parallel mediation analysis. Our model is based on the Latent Dirichlet Allocation (LDA) model that incorporates treatment and outcome variables.

115-2082 The More, the Merrier? Female Representation Across Management Levels and Product Recall Decisions and Outcomes

Vivek Astvansh, Assistant Professor, Indiana University Bloomington, United States

Anto Verghese, Assistant Professor, University of North Texas, United States

The authors test these arguments by measuring the effect of female representation at an automotive manufacturer's executive level (FREL) on the manufacturer's (1) number of voluntary vehicle recalls and (2) rate of completing the recalls by repairing the recalled vehicles. They find that FREL has an inverse-U shaped effect.

115-2083 The Value of External Data for Digital Platforms: Evidence from a Field Experiment

Xiaoxia Lei, Student, Shanghai Jiao Tong University, China

Yixing Chen, Student, University of Notre Dame, United States

Ananya Sen, Assistant Professor, Carnegie Mellon University, United States

Firms increasingly leverage external data with an aim to unlock improvements in products and services, but it is challenging to measure the value of external data. Collaborating with a large Chinese technology company, the authors analyze a randomized field experiment to measure the causal impact of external data.

115-2092 Impact of Obesity Policy Perceptions on Firms' Marketing Outcomes

Ece Baskol, Manager, ABC, Turkey

Sajeesh Sajeesh, Associate Professor, University of Nebraska Lincoln, United States

Ozgur Araz, Professor, University of Nebraska Lincoln, United States

Obesity has become a global epidemic. Firms also contribute to complexity with their food marketing initiatives. However, the effect of policies could be different for firms of different sizes, competitive intensity, and revenues. Therefore, we collect data using a survey to study variation in perceptions across managers from different firms.

Invited Session

458	Wednesday, 04:30 PM - 06:00 PM, Silver Spring 2	Track: Inventory and Logistics Management
	Invited Session: Distracted driving and technologies in Last Mile	
	Chair(s): Suman Niranjana Vipul Garg	

115-0715 Neutralization and Respect for Safety as Influences on Distracted Driving Behavior Among Young Adults

Janeth Gabaldon, Student, University of North Texas, United States

Suman Niranjana, Assistant Professor, University of North Texas, United States

Timothy Hawkins, Associate Professor, University of North Texas, United States

The study investigates how respect for safety, neutralization, and polychronicity contribute to the distracted driving behavior of young drivers. The framework is analyzed through the cognitive dissonance theory lens to explore cognitive human factor variables that increase or decrease engagement in the behavior followed by a post-hoc analysis driver's profile.

115-0732 Does Psychological and Physiological Characteristics of a Driver Impact Performance: A Driver Simulation Perspective

Suman Niranjana, Assistant Professor, University of North Texas, United States

Janeth Gabaldon, Student, University of North Texas, United States

Arunachalam Narayanan, Associate Professor, University of North Texas, United States

Vipul Garg, Student, University of North Texas, United States

brian sauser, Associate Professor, University of North Texas, United States

Wednesday, 04:30 PM - 06:00 PM

The study is focused on determining if psychological factors such as personality, polychronic behavior, cognitive failure, task load, sleeplessness, and respect for safety influence driver performance. Additionally determine if the physiological factors such as emotional arousal, heart rate, cognitive load, and eye-tracking will help with predicting driver performance.

115-1685 Last Mile Delivery Aided by Drone: A Systematic Review of Literature and Research Directions

Vipul Garg, Student, University of North Texas, United States
Suman Niranjana, Assistant Professor, University of North Texas, United States
Terrance Pohlen, Professor, University of North Texas, United States
Victor Prybutok, Professor, University of North Texas, United States
David Gligor, Professor, University of North Texas, United States

Using drones, retailers hope to decrease delivery times and increase flexibility and velocity. In the literature, review studies are scarce, particularly those focusing on drone applications in the last mile. This study attempts a first step toward consolidating and providing a comprehensive view of drones by providing multiple frameworks.

115-1831 Blockchain-based Last Mile Delivery: Drivers of Trust amongst Retailer-Consumer-3PL Triad

Kiran Patil, Student, University of North Texas, United States

Most retailers in consumer goods have struggled to provide reliable last-mile delivery, particularly during the holiday season, despite technology-driven flexibility and convenience. This study contends that blockchain will reduce delivery struggles as downstream supply chain firms transition onto blockchain-based networks.

Invited Session

459	Wednesday, 04:30 PM - 06:00 PM, Winter Park 49	Track: Product Innovation and Technology Management
	Invited Session: Product and Process Innovation	
	Chair(s): Mohsen Mosayebi	

115-0813 Emerging Product Regression of the Business Jet

Haruo Horaguchi, Professor, Hosei University, Japan
Reiko Takenouchi, Professor, Seijo University, Japan
Vidyananya Gargeya, Professor, The University Of North Carolina At Greensboro, United States

The paper presents a comparative study of 7 different business jets (developed by 5 companies). The findings show that irrespective of location and company of origin, the customer requirements play a major role in the development of the product. Some propositions are presented for future research.

115-1282 Customer perceptions on product origin: Analysis of Amazon Reviews

Maneesh Reddy Ajjuguttu, Student, Clemson University, United States
Ahmet Colak, Assistant Professor, Clemson University, United States
Lawrence Fredendall, Professor, Clemson University, United States

Literature has established that learning the product origin information would change the customer perceptions towards the product. In this research, we study how the customers' on Amazon.com are affected when the product origin information is obtained from the reviews, specifically under conditions when the information is ambiguous.

115-1842 Sustainable Innovation and Operations Management: An Integrated Approach to Eastern and Western Philosophies

Mohsen Mosayebi, Assistant Professor, Georgia College & State University, United States
Mehrnaz Khalaj Hedayati, Assistant Professor, Georgia College & State University, United States

Sustainable manufacturing companies as dynamic systems need to upgrade themselves. The eastern philosophy uses continuous improvement as internal innovation management system. The western philosophy uses R&D as source of external innovation. This paper presents a conceptual model of the combinational method using both internal and external innovation in operations management.

Sessions for Thursday, May 25

Thursday, 08:00 AM - 09:30 AM

Invited Session

464

Thursday, 08:00 AM - 09:30 AM, Celebration 2

Track: Energy and Natural Resource Management

Invited Session: Data-driven Electricity Markets and Sustainability

Chair(s): Kai Pan

115-0238 Data-driven Operations for a Smart Vehicle-grid System

Ziliang Jin, Student, The Hong Kong Polytechnic University, Hong Kong, China

Kai Pan, Associate Professor, The Hong Kong Polytechnic University, Hong Kong, China

Jianqiang Cheng, Associate Professor, University of Arizona, United States

Yulan Wang, Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Max Shen, Professor, University of California Berkeley, United States

We consider a vehicle-grid integration system supported by vehicle-to-grid (V2G) technology. We aim to identify the potential of V2G in such synergy. To address this problem, we propose a two-stage robust mixed-integer linear programming (MILP) model which jointly optimizes the energy grid's planning and EV sharing company's operations under uncertainties.

115-0463 Subsidies/Taxes Induced by an Adoption Target or a Budget Limit

Lingling shi, Student, UT Dallas, United States

Metin Cakanyildirim, Professor, University of Texas Dallas, United States

Suresh Sethi, Professor, University of Texas Dallas, United States

A government, managing green product subsidies, may minimize the subsidy expenditure with an adoption target or maximize the adoption level with a subsidy budget. Equivalence of these two government problems is not straightforward and is investigated under a combination of subsidies/taxes in a Stackelberg game involving manufacturers and service providers.

115-1302 Optimal Operation of Virtual Power Plants for Primary Reserve Markets

Anil Kaya, Student, Karlsruhe Institute of Technology, Germany

Yashar Ghiassi-Farrokhfal, Associate Professor, Rotterdam School of Management, Netherlands

Steffen Rebennack, Professor, Karlsruhe Institute of Technology, Germany

Derek Bunn, Professor, London Business School, United Kingdom

Kai Pan, Associate Professor, The Hong Kong Polytechnic University, Hong Kong, China

Increasing renewables requires primary reserve resources. Conventional resources are insufficient and often polluting. As alternatives, virtual power plants (VPP), aggregating local renewables, and storage can help. However, their profitability and unreliability for primary reserve services are unclear. Our paper models and evaluates VPPs as primary reserve service providers.

115-2078 Data-driven Clustering and Feature-based Retail Electricity Pricing

N. Bora Keskin, Associate Professor, Duke University Durham, United States

Yuxing Li, Assistant Professor, Johns Hopkins University, United States

Nur Sunar, Associate Professor, Kenan-Flagler Business School, United States

We design a data-driven joint spectral clustering and feature-based pricing policy for an electric utility. This paper is the first to analyze such a policy with different types of feature heterogeneity. Our case study uses real-life smart meter data from Texas and illustrates the substantial value of our policy.

Invited Session

465

Thursday, 08:00 AM - 09:30 AM, Celebration 3

Track: Healthcare Operations Management

Invited Session: Service and Coordination in Healthcare Operations

Chair(s): Tharanga Rajapakshe Xueze Song

115-0121 Emergency Care Access vs. Quality: Uncovering Hidden Consequences of Fast-Track Routing Decisions

Shuai Hao, Student, University of Illinois Urbana-Champaign, United States

Zhankun Sun, Assistant Professor, City University of Hong Kong, Hong Kong, China

Yuqian Xu, Assistant Professor, UNC Chapel Hill, United States

This work aims to examine the impact of the emergency department (ED) fast-track (FT) routing decisions on patient outcomes and propose evidence-based routing policies to guide the FT routing decisions.

115-0738 Appointment Scheduling in Multi-Stage Outpatient Clinics under Patient Heterogeneity

Pelin Kesrit, Student, Texas A&M University, United States

Chelliah Sriskandarajah, Professor, Texas A&M University College Station, United States

Jon Stauffer, Assistant Professor, Mays Business School, Texas A&M University, United States

We design effective appointment templates, based on block scheduling, for two-stage outpatient clinics under patient heterogeneity having different mean service times. We present the effectiveness of our algorithm under both deterministic and stochastic service times assumption with an objective to minimize patient waiting time, healthcare providers' idle time and overtime.

115-0831 Analysis of Compensation Contracts for Providers in Clinical Studies

Thursday, 08:00 AM - 09:30 AM

Xueze Song, Student, University of Illinois at Urbana Champaign, United States

Mili Mehrotra, Associate Professor, University of Illinois, United States

Tharanga Rajapakshe, Associate Professor, University of Florida, United States

Participant retention is a significant challenge faced by clinical studies. In this work, we consider how the sponsor of a clinical study can motivate investigators and coordinators to improve participant retention for the study. We identify three different clinical study settings observed in practice and derive the optimal compensation contracts.

115-1313 Optimizing Return and Secure Disposal of Prescription Opioids to Reduce Diversion to Secondary Users

Md Mahmudul Hasan, Assistant Professor, University of Florida, United States

Tasnim Faiz, Post Doc/Researcher, University of Maryland, United States

Alicia Modestino, Associate Professor, Northeastern University, United States

Gary Young, Professor, Northeastern University, United States

Md Noor-E-Alam, Assistant Professor, Northeastern University, United States

Unused prescription opioids diversion to secondary users significantly increased risk of OUD and accidental opioid overdose. We aim to address this critical public health problem by designing a data-driven optimization framework to determine the optimal incentive disbursement plans and locations of easily accessible opioid disposal kiosks for opioid users.

Invited Session

466	Thursday, 08:00 AM - 09:30 AM, Celebration 4	Track: Healthcare Operations Management
	Invited Session: Topics in Health Equity	
	Chair(s): Anita Carson Ankita Shirahatti	

115-0389 How to Drive Health Equity through Rigorous Deployment of Digital Transformation in Healthcare Operations

Ann Bagchi, Associate Professor, Rutgers Business School, United States

Alok Baveja, Professor, Rutgers University, United States

Digital transformation (DT) involves the application of technology to promote changes in business models, processes, and structures. We examine how DT in the system of delivery of care for HIV can improve patients' experiences of care, enhance population health, and reduce healthcare costs.

115-0492 The Impact of Workload on Racial Disparities in Healthcare

Alison Murphy, Student, University of Minnesota, United States

Rachna Shah, Associate Professor, University of Minnesota, United States

There are stark racial disparities in maternal mortality in the US. We examine between- and within- hospital factors that contribute to these disparities. We show that significant racial disparities exist within hospitals and study how workload and patient race interact to contribute to disparities in severe morbidity and mortality.

115-0559 Optimal COVID-19 Vaccination Facility Location under Heterogeneous Demand

Jingyuan Hu, Student, University of California Los Angeles, United States

Fernanda Bravo, Assistant Professor, UCLA Anderson School of Management, United States

Elisa Long, Associate Professor, UCLA Anderson School of Management, United States

We empirically examine the how proximity to a vaccination site relates to uptake among different communities using cross-sectional data within California. Integrating the results into an optimization model, we show that by replacing 18% of the current locations with dollar stores can lead to 1.5 million additional vaccinations in California.

Invited Session

467	Thursday, 08:00 AM - 09:30 AM, Celebration 5	Track: Healthcare Analytics
	Invited Session: Policy and market impacts on healthcare operations	
	Chair(s): Jonathan Phares	

115-0280 The Impact of Opioid Legislation on the Supply Chain Stakeholders

Amirreza Sahebi, Student, North Carolina State University, United States

Amir Sadeghi, Student, North Carolina State University, United States

Robert Handfield, Professor, North Carolina State University, United States

Many states enacted legislation to quell the opioid pandemic in the United States. However, few policy reviews consider unintended consequences of such policies. To assess South Carolina's state-level drug policies for effectiveness in reducing prescription opioid misuse as well as for changes in patients' interactions with other stakeholders.

115-1034 Physician Practice Migration and Changes in Practice Style: An Empirical Analysis of Inappropriate Diagnostic Imaging

E. David Zepeda, Associate Professor, Boston University, United States

We exploit migration patterns of primary care physicians by tracking physician migrations to practice sites comprised of new peers who shared actual physical working space. We examined whether a patient's likelihood of receiving an inappropriate referral for diagnostic imaging was associated with a change in the work environment.

115-1225 Effect of Isolation Wards on Hospital Clinical Outcome: An Agent Based Modeling Perspective

Sukrit Pal, Assistant Professor, Iowa State University, United States

Thursday, 08:00 AM - 09:30 AM

Anand Nair, Professor, Michigan State University, United States

Hospitals implement different policies to better manage care capacity in environment of uncertain demand. In this study, we investigate one such policy - creation of access controlled COVID isolation ward - to understand how hospitals exploit such policy to manage their protective equipment inventory and patient care.

115-1247 Testing policy assumptions in the U.S. pharmaceutical supply chain

Molly Hughes, Student, Logistics & Marketing Department, United States

Public policies (e.g. the GDUFA laws and the ACA) are built off the assumption that generic and brand drugs are interchangeable. We test this assumption through exploration of each product types' risk regarding logistic service quality and highlight how differences in supply chain and logistics practices are impactful to policy.

Invited Session

468	Thursday, 08:00 AM - 09:30 AM, Celebration 6	Track: Healthcare Analytics
	Invited Session: AI in Healthcare	
	Chair(s): Mehmet Ayvaci Ozgur Aksoy	

115-0246 Learning to be Proficient? A Structural Model of User Dynamic Engagement in E-Health Interventions

Tongxin Zhou, Assistant Professor, Arizona State University, United States

Yingfei Wang, Assistant Professor, University of Washington, United States

Lu (Lucy) Yan, Associate Professor, Indiana University Bloomington, United States

Yong Tan, Professor, University of Washington, United States

In this study, we examine individuals' dynamic engagement in eHealth interventions to shed light on efficiency of online healthcare delivery. Leveraging a structural-modeling approach, we characterize individuals' decision making and perception updates. Our estimation results reveal multiple implications regarding individuals' learning performance in online health-management settings and online intervention design.

115-0582 People Talking and AI Listening: How Does Stigmatizing Language in EHR Notes Affect AI Fairness

Yizhi Liu, Student, University of Maryland - College Park, United States

Weiguang Wang, Assistant Professor, University of Rochester, United States

Guodong Gao, Professor, University of Maryland, United States

Ritu Agarwal, Professor, University of Maryland, United States

EHRs enable various artificial intelligence (AI) applications in healthcare, but EHRs may contain Stigmatizing Language (SL) that reflects clinician bias. We find that removing SL improves AI performance and fairness. In addition, clinicians who work more closely with colleagues, measured by centrality, are more likely to write SL.

115-0996 What Drives Algorithm Use? An Empirical Analysis of Algorithm Use in Type 1 Diabetes Self-Management

Wilson Lin, Assistant Professor, Santa Clara University, United States

Song-Hee Kim, Associate Professor, Seoul National University, South Korea

Jordan Tong, Associate Professor, University of Wisconsin-Madison, United States

Using the bolus calculator (algorithm) use behavior from a field experiment on Type 1 Diabetes self-management, we contribute field analysis to identify drivers of algorithm use, such as previous algorithm use, previous performance feedback exposure to multiple, potentially conflicting measurements, the need for precision, and deviations from algorithm recommendations.

115-1654 When Systemic Biases Taint Algorithms: A Path to More Equitable Access in Healthcare

Ozgur Aksoy, Student, The University of Texas at Dallas, United States

Mehmet Ayvaci, Associate Professor, The University of Texas at Dallas, United States

Asunur Cezar, Professor, Bogazici University, Turkey

Srinivasan Raghunathan, Professor, The University of Texas at Dallas, United States

Algorithms using historical data can replicate and amplify existing flaws in social systems. For example, systemic disparities in access to healthcare can taint algorithmic predictions, leading to "social bias." We formulate a bias-aware algorithmic decision-making framework that factors the origins of social bias in healthcare while considering fairness outcomes.

115-1742 Effectiveness of Using a Multi-Task Learning-Based Predictive Model for Various Hospital Outcomes

Deepika Gopukumar, Assistant Professor, Saint Louis University - School of Medicine, United States

Abhijeet Ghoshal, Associate Professor, University of Illinois Urbana-Champaign - Gies College of Business, United States

Martin Schoen, Assistant Professor, Saint Louis University - School of Medicine, United States

Fred Buckhold, Associate Professor, SLUCare Physician Group; Saint Louis University-School of Medicine, United States

Hospital readmissions have been one of the major contributors to healthcare costs. Prior literature focuses mainly on predicting readmissions and not on costs. This study evaluates the effectiveness of using a multi-task learning-based predictive model for different types of readmission costs and the readmitted length of stay.

Contributed Session

469	Thursday, 08:00 AM - 09:30 AM, Celebration 7	Track: Sustainable Operations Management
	Contributed Session: Climate Change and Carbon Management Policies	
	Chair(s): Sinan Erzurumlu	

Thursday, 08:00 AM - 09:30 AM

115-0255 A mechanism test of carbon neutrality based on the synergy of China's carbon trade policy

Shiyuan Li, Student, Tongji University, China
Hongda Liu, Student, Tongji University, China
Xiaoxia Wang, Student, Shanghai University, China

This paper constructs a synergistic model of carbon trade policy and investigates its mechanism on carbon neutrality in China. We conclude the configurations in benefits of net-zero emission policy. Based on Chinese context, a research path for the synergy of carbon trade policy on carbon neutrality is proposed.

115-0381 Competitive Industry's Response to Environmental Tax Incentives for Green Technology Adoption

Dmitry Krass, Professor, University of Toronto, Canada
Anton Ovchinnikov, Professor, Queens University, Canada

We consider market and technological equilibria in Cournot competition with linear and isoelastic demand between firms heterogeneous in operational and environmental efficiency. We examine possibilities and limitations of incentivizing "green" technology choice with environmental/"carbon" taxes. The resultant equilibria and the impact of taxation may qualitatively differ with demand function.

115-0859 Accelerating the adoption of ESG at Entrepreneurial Franchise Systems

Sinan Erzurumlu, Professor, Babson College, United States
Phil Kim, Professor, Babson College, United States

Many corporations are facing a demand to create action-oriented Environmental, Social, and Governance (ESG) strategies. We focus on how the franchisor-franchisee relationships are effective at the ESG adoption and mitigation of climate change risk. The franchise system offers guidelines for a network structure embedded with ESG strategies.

115-1977 Safe production and operation of hydrogen as an alternative fuel in maritime transportation for future

Mir MD Ashfaque Sumon, Student, University of South-Eastern Norway, Norway

The present world is desperately looking for safe alternative fuel for global maritime transportation because of the zero-carbon emission policy regulated by IMO. This paper will delineate the risk assessment of hydrogen fuel by the STPA (Standard theoretic process analysis) method for safe production and operation

Contributed Session

470	Thursday, 08:00 AM - 09:30 AM, Celebration 8	Track: Sustainable Operations Management
	Contributed Session: Sustainable Manufacturing	
	Chair(s): Jacob Jensen	

115-0329 Data Supported Sustainable Operational Excellence in Manufacturing Industries

Jukka Hemilä, Senior Scientist, Vtt Technical Research Centre of Finland, Finland

Sustainability needs to be part of all operations in manufacturing industries. Study indicate how data can enable sustainability and can be utilized in sustainable operations. Findings are based on the multiple case studies in Finland.

115-0660 A resource dependence perspective on how inventory policy impacts the environment

Jacob Jensen, Student, Auburn University, United States
Dustin Cole, Assistant Professor, Auburn University, United States

This study evaluates the effect of inventory policy and uncertainty on firm environmental performance. We find that change in inventory levels can impact firm environmental performance. These results highlight the need for policy incorporating both environmental and financial performance targets in the face of uncertainty.

115-2036 Adoption of Industry 4.0 towards sustainable manufacturing

Kalinga Jagoda, Associate Professor, University of Guelph, Canada
Premaratne Samaranayake, Senior Lecturer, University of Guelph, Australia

Sustainable manufacturing practices are becoming significant and emerging areas of interest among industry practitioners and research investigators in recent times. This paper examines the impact of Industry 4.0 technologies on products, processes and system and the level of improvement of economic objectives, environmental conditions and social factors.

Invited Session

473	Thursday, 08:00 AM - 09:30 AM, Celebration 11	Track: Manufacturing Operations
	Invited Session: Sourcing and Operational Decisions for Manufacturing and Retailing	
	Chair(s): Dennis Yu	

115-0134 Sustainable Sourcing Considering Wholesale Price Discount

Yu Xia, Professor, College of William and Mary, United States
Gang Li, Associate Professor, Bentley University, United States

We study a sourcing plan that consists spontaneous decisions on supplier selection, order allocation, and sustainability investment on selected suppliers. Sourcing cost is complicated by the selected suppliers' price discount menus. Optimization model is developed, numerical tests are conducted to check the impact of suppliers' discount pricing strategy.

Thursday, 08:00 AM - 09:30 AM

115-0655 An Integrated Location, Allocation and Capacity Planning Model for Hyper-local Retailing

Ajinkya Tanksale, Assistant Professor, Clarkson University, United States

Santosh Mahapatra, Professor, Clarkson University, United States

Instant, door-delivery retailing that spurred during the pandemic through hyper-local, dark stores has been continuing to expand. The infant “fast and fresh” business model is complex and requires integrated location, allocation and capacity planning. We propose a mixed-integer programming model to address the relevant strategic, tactical and operational decision-making issues.

115-0763 The Impact of VMI on an Online Platform's Pricing and Sourcing Decisions

Dennis Yu, Associate Professor, Clarkson University, United States

We study an online platform's optimal pricing and sourcing decisions when the platform can purchase from a manufacturer who also provides VMI option to the platform while having its own OEM direct channel. We investigate the platform and the manufacturer's optimal pricing decisions under two scenarios of the dual-channel competition.

115-1891 Seeking Investment Operational and Timing Decisions by Manufacturing Startups

Xinxin Hu, Associate Professor, University of Houston - Downtown, United States

Xiangling Hu, Associate Professor, Grand Valley State University, United States

Ping Su, Associate Professor, Hofstra University, United States

We use dynamic programming to determine a start up's best timing to approach the investors with its optimal economic performance measured by profitability and market size. We establish a simple threshold policy to suggest whether to salvage, seek the investment, or continue the operation for future opportunities.

Contributed Session

474	Thursday, 08:00 AM - 09:30 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Prepositioning & Allocation	
	Chair(s): Laura Heuser	

115-0452 Scenario-Probability Robust Model for Prepositioning Relief Supplies

Muer Yang, Associate Professor, University of St. Thomas, United States

Sameer Kumar, Professor, University of St. Thomas, United States

Xinfang Wang, Professor, Georgia Southern University, United States

Michael Fry, Professor, University of Cincinnati, United States

We develop a scenario-probability-robust optimization model to preposition relief supplies, and demonstrate its effectiveness using a realistic case of hurricane via simulation. Our model extends the robust optimization and applies to applications where a full empirical probability distribution of uncertain parameters can only be imprecisely estimated.

115-0837 Incorporating Preparedness in Equitable Disaster Relief Resource Allocation

Zhenlong Jiang, Student, George Mason University, United States

Ran Ji, Assistant Professor, George Mason University, United States

We propose a learn-then-optimize framework to design equitable relief resource allocation by incorporating the residents' preparedness. We first employ machine learning approaches to predict the preparedness level, which is later used in a two-stage multi-objective stochastic programming model seeking tradeoff among the effectiveness, equity, and efficiency.

115-0939 A method for building a prepositioning decision support tool and its application to epidemics

Laura Heuser, Student, ETH Zurich, Switzerland

Nathan Kunz, Associate Professor, University of North Florida, United States

Stephan Wagner, Professor, ETH Zurich, Switzerland

John Wasswa, Pharmacist, Management Sciences for Health, Uganda

Stock prepositioning is critical for an effective response to epidemic outbreaks. In this paper we present a method, decision support tool and process for such prepositioning decisions. This research in collaboration with the Ministry of Health of Uganda builds on the design science method and an empirical validation.

115-1072 Analyzing the dynamics of relief item priority and allocation using deprivation cost functions

Yu Fan, Post Doc/Researcher, University of Science and Technology of China, China

Tongxin Liu, Student, University of Science and Technology of China, China

Xihui Wang, Professor, School of Management, China

Luk Van Wassenhove, Professor, INSEAD, France

We conduct a field investigation in China and collect the Willingness-To-Pay (WTP) data to estimate the deprivation cost functions of some relief items, allowing us to solve a practical delivery and allocation problem, which provides an original appropriate approach to incorporate the dynamic priority of relief items delivery and allocation.

Contributed Session

475	Thursday, 08:00 AM - 09:30 AM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Coordination	
	Chair(s): Diana C. Guzmán-Cortés	

Thursday, 08:00 AM - 09:30 AM

115-0943 Process modularity, supply chain responsiveness, and moderators

Félicia SAÏAH, Student, Hanken School of Economics, Finland

Diego Vega, Assistant Professor, HUMLOG Institute, Finland

Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands

JOAKIM KEMBRO, Associate Professor, Lund University, Sweden

This research describes how Doctors without Borders (MSF) employed process modularity to maintain supply chain responsiveness during the Covid-19 pandemic. Eight moderators that affect the impact of process modularity on supply chain responsiveness are presented and the applicability of process modularity in other humanitarian organizations is investigated.

115-1065 Improving the activation of government stakeholders during disaster response - a Brazilian perspective

Ana Nascimento, Student, Federal University of Rio De Janeiro, Brazil

Híngred Resende, Student, Federal University of Rio De Janeiro, Brazil

Tharcisio Fontainha, Professor, Federal University of Rio De Janeiro, Brazil

Disaster recurrence motivates the adoption of a process approach for more efficient operations. Therefore, this research identifies patterns and opportunities in government activation by comparing 13 disaster response processes involving Brazilian stakeholders. Results reveal different processes, bureaucratic activities, and coordination barriers surpassed through the proposition of a standardized process model.

115-2061 Collaborative decision support model for humanitarian logistics

Diana C. Guzmán-Cortés, Professor, Pontifica Universidad Javeriana, Colombia

William Guerrero, Associate Professor, Universidad De La Sabana, Colombia

Marie-Eve Rancourt, Associate Professor, HEC Montréal, Canada

We present a collaborative decision-support model that considers the planning of joint inventory and routing operations between local transportation providers (LTP) and humanitarian agencies (HA), evaluating different scenarios associated with different collaboration mechanisms where we include elements such as information sharing, resources sharing, centralized setting, and decentralized setting.

Contributed Session

476

Thursday, 08:00 AM - 09:30 AM, Celebration 14

Track: Service Operations

Contributed Session: **Service Quality and Queueing**

Chair(s): Xinchang Wang

115-0137 Service Rate Differentiation for Homogeneous Impatient Customers

Chenguang (Allen) Wu, Assistant Professor, Hong Kong University of Science and Technology, Hong Kong, China

We study the joint service rate and waiting time differentiation for homogeneous impatient customers in parallel server queueing systems. We propose an easy-to-implement policy that differentiates customers on both service rates and waiting times, and show that our policy can lead to significant improvements over policies without service rate differentiation.

115-0372 The Queue Behind the Curtain: Information Disclosure in Omnichannel Services

Abhishek Ghosh, Assistant Professor, Tulane University, United States

Achal Bassamboo, Professor, Northwestern University, United States

Martin Lariviere, Professor, Northwestern University, United States

Increasing number of firms are running multiple channels to serve customers. In this paper, we address the question of whether or not a firm should disclose congestion-related queue information to its customers in an omnichannel setting, focusing on the impact of this decision on customer channel choice behavior.

115-0830 In-queue Queueing: Gaining Utility through Ancillary Service while Waiting

Yang Li, Assistant Professor, Richard Ivey Business School, Canada

Baolong Liu, Assistant Professor, ShanghaiTech University, China

Rowan Wang, Associate Professor, Southern University of Science and Technology, China

We investigate a queueing system with the primary service provider also providing an ancillary service which attracts more demand but hurts the utility of the primary service customers. By comparing it to the primary queue and priority queue, we find the ancillary service improves profit and welfare under certain conditions.

115-1741 Optimal Pricing and Information Sharing in Queueing Systems

Xinchang Wang, Assistant Professor, Washington State University, United States

Sigrun Andradottir, Professor, Georgia Institute of Technology, United States

Hayriye Ayhan, Professor, Georgia Institute of Technology, United States

We study optimal pricing in a queueing system that can be observable or unobservable, depending on how customers receive information to estimate sojourn time. We show that if no (all) customers overestimate sojourn time in the observable system, the service provider is better off making the system observable (unobservable).

Contributed Session

478

Thursday, 08:00 AM - 09:30 AM, Coral Spring 1

Track: Emerging Topics in Operations Management

Contributed Session: **Blockchain and Technology**

Chair(s): Christopher Zobel

Thursday, 08:00 AM - 09:30 AM

115-0473 The Impact of Blockchain Technology on Competing Suppliers in E-commerce Platform

Rongyi Huang, Student, Renmin University of China, China

Jiahao Yu, Student, Renmin University of China, China

We utilize a game theory model to study blockchain adoption's impact on different supply chain players in an e-commerce platform. We construct a supply chain consisting of a high-class supplier, a low-class supplier and an e-commerce platform and find that the low-class supplier will free ride another supplier's blockchain adoption.

115-1002 A decision support framework for blockchain consensus algorithm selection

Behnam Malmir, Student, Virginia Tech, United States

Hamed Baziad, Student, ., Iran (Islamic Republic of)

Christopher Zobel, Professor, Virginia Tech, United States

The performance of a blockchain depends on the consensus algorithm (CA) it uses. Finding the ideal CA to adapt in a system is crucial. Yet, it is a challenging task for the decision-makers as they must compromise between conflicting criteria. This paper presents a CA-selection framework modeled by DEA approach.

115-1011 Stakeholder engagement in blockchain development: The case of governing lithium-ion battery circular supply chain safety

Zhuowen Chen, Student, Worcester Polytechnic Institute, United States

Joseph Sarkis, Professor, Worcester Polytechnic Institute, United States

Yildizbasi Abdullah, Post Doc/Researcher, Worcester Polytechnic Institute, United States

Understanding blockchain (BC) development involvement of stakeholders is presented. A unique RACI matrix analysis with industry and academic expert input is used to identify stakeholder roles in BC development for governing lithium-ion battery safety issues in circular systems. Implications and research directions are presented.

Contributed Session

480	Thursday, 08:00 AM - 09:30 AM, Blue Spring 1	Track: Supply Chain Risk Management
	Contributed Session: Supplier Issues	
	Chair(s): Vishwakant Malladi	

115-0049 Supplier selection under consideration of risk and cost - A set covering model

Marcus Brandenburg, Professor, Flensburg University of Applied Sciences, Germany

The proposed study deals with the problem to select a set of suppliers that minimizes the cost and the risk of supply disruptions. A set covering problem formulation is chosen to model the supplier selection problem and heuristic approaches are applied to solve the formulated problem.

115-0911 The significance of frequency and duration of supplier disruptions on risk mitigation

Vishwakant Malladi, Assistant Professor, Indian School of Business, India

Diwakar Gupta, Professor, University of Texas Austin, United States

Kumar Muthuraman, Associate Professor, University of Texas Austin, United States

Frequency and duration of disruptions are distinct components of supplier disruption risk. Managers must tailor risk mitigation strategies to these two components. We model these components of independently using a continuous-time Markov chain and show that the frequency and duration of disruptions affect risk management differently.

115-1438 Compound Risks in Supply Chain Operations: Can Network Reconfiguration Save the Deal?

Naoum Tsolakis, Assistant Professor, International Hellenic University, Greece

Long-lasting and overlapping disruptions impact intertwined supply networks. This research investigates the interactions of such compound risks and their effect on supply chain performance. The developed System Dynamics model acts as a decision-making tool for scenario planning of resource allocation and supply network reconfiguration to respond to compound risks.

Invited Session

481	Thursday, 08:00 AM - 09:30 AM, Blue Spring 2	Track: Supply Chain Risk Management
	Invited Session: Empirical Supply Chain ESG Risk Management	
	Chair(s): WANG Ziang	

115-0636 More than demand variability: Financial bullwhip along supply chain

Chong Chen, Assistant Professor, Central University of Finance And Economics, China

Ziang Wang, Assistant Professor, PolyU, Hong Kong, China

Demand variability increasing along the production network, or the so-called bullwhip effect, has been well established in literature. We further identify a financial bullwhip, i.e., the trade credit variability is larger for more upstream firms along the supply chain. We further discuss the factors intensifying or mitigating the financial bullwhip.

115-0954 Does Carbon Emission Threat Supply Chain Relationship? International Evidence

Ziang Wang, Assistant Professor, PolyU, Hong Kong, China

Yong Jin, Associate Professor, Hong Kong Polytechnic Univ, Hong Kong, China

Duan Yang, Assistant Professor, Hong Kong Baptist University, Hong Kong, China

Hao Ying, Student, Chinese Univ of Hong Kong, Hong Kong, China

Thursday, 08:00 AM - 09:30 AM

The global supply chain relationships have been experienced the new threats and challenges to achieve the carbon neutrality. Drawing on the signaling theory and the transaction cost theory, carbon emissions can be the potential source of the disruption.

115-2045 The Endemic Population-Trust and Supply Chain Networks

Volodymyr Babich, Professor, Georgetown University, United States

Gilles Hilary, Professor, Georgetown University, United States

Ziang Wang, Assistant Professor, PolyU, Hong Kong, China

Jing Wu, Associate Professor, The Chinese University of Hong Kong, Hong Kong, China

The effect of the endemic population-trust on the formation and dissolution of supply chain links among firms is not fully understood. We apply the assortive matching theory to analyse the supply chain partnerships. Our empirical evidence is consistent with the complementarity of the endemic population trust of supply chain partners.

Contributed Session

483

Thursday, 08:00 AM - 09:30 AM, Rainbow Spring 2

Track: Operational Excellence

Contributed Session: Miscellaneous Topics in Operational Excellence

Chair(s): Chenghuai Li

115-1139 Using Permissible Delay in Payments to Coordinate a Two-Stage Supply Chain under Carbon Tax Regulation

Ming-Feng Yang, Professor, National Taiwan Ocean University, Taiwan

Jatinder Gupta, Professor, University of Alabama Huntsville, United States

Chieh Lee, Associate Professor, National Sun Yat-Sen University, Taiwan

The carbon tax influences the production, logistics, and all operations processes for the supply chains. We examine how supply chain financing strategies, in particular, permissible delay in payment options, can coordinate a two-level supply chain by purchasing policy and pricing strategy to reduce the financial impact of a carbon tax.

115-1182 Condition-Based Production for Stochastically Deteriorating Systems: Optimal Policies and Learning

Collin Drent, Assistant Professor, Eindhoven University of Technology, Netherlands

Melvin Drent, Assistant Professor, Eindhoven University of Technology, Netherlands

Joachim Arts, Professor, University of Luxembourg, Luxembourg

Production systems deteriorate due to usage and may eventually break down, resulting in high maintenance costs at scheduled maintenance moments. This deterioration behavior is affected by the system's production rate. While producing at a higher rate generates more revenue, the system may also deteriorate faster. We study this trade-off.

115-1662 The Blockchain Newsvendor: Value of Freshness Transparency and Smart Contracts

N. Bora Keskin, Associate Professor, Duke University Durham, United States

Chenghuai Li, Student, Duke University, United States

Jeannette Song, Professor, Duke University, United States

Motivated by blockchain applications in the fresh produce industry, we consider a problem where the retailer can have more transparency over the food supply chain by adopting blockchain. We quantify the value of blockchain-enabled freshness transparency and smart contracts by analyzing the retailer's expected profit growth and food waste reduction.

115-1744 The Impact of Cost Auditing on Supply Chain Social Responsibility

Haiying Yang, Assistant Professor, Missouri State University, United States

Zhengping Wu, Associate Professor, Syracuse University, United States

Audit is becoming an increasingly important tool to improve supply chain efficiency. We investigate potential negative social responsibility externalities of audit, and discuss corresponding managerial implications. We also analyze the impact of social responsibility change on supply chain profitability.

Invited Session

484

Thursday, 08:00 AM - 09:30 AM, Barrel Spring 1

Track: POM-Marketing Interface

Invited Session: Digital platforms: Pricing and strategies

Chair(s): Anurag Garg Arunima Chhikara

115-0666 The Art of Free Tokens: An Economic Analysis of Promotional Crypto Airdrops

Xinyu Zang, Student, University of Florida, United States

Xiang(Shawn) Wan, Assistant Professor, Santa Clara University, United States

Jian Li, Student, Xi'an Jiaotong University, China

Kenny Cheng, Professor, University of Florida, United States

Xi Zhao, Professor, Xi'an Jiaotong University, China

Many blockchain-based startups have now employed the strategy of "airdrop" to gain attention from new investors and get more investors trading in it when it lists during the Initial coin offerings (ICO). This study develops a two-period model incorporating the airdrop strategy. Our study has significant implications for various stakeholders.

115-1021 Study Of Health Outcomes In A Technology Enabled Virtual Setting

Max Terekhov, Student, University of Florida, United States

Thursday, 08:00 AM - 09:30 AM

This paper presents an empirical analysis of health insurance claims data to explore telemedicine outcomes. Specifically, I utilize causal forests and a retrospective matched case control study design to demonstrate statistically significant changes in costs, utilization, and medication adherence of telehealth users.

115-1038 Business Analytics: Emerging Practice And Research Issues In The Health Insurance Industry.

Max Terekhov, Student, University of Florida, United States

This paper summarizes emerging practice and research issues in the health insurance industry. We provide an industry overview, epitomize business analytics applications, and outline current and emerging problems of interest to key stakeholders and researchers in information systems, operations management, and healthcare management.

115-1586 Pricing Strategies of Digital Media Platforms

Anurag Garg, Assistant Professor, University of Kansas, United States

Vashkar Ghosh, Assistant Professor, University of North Carolina Greensboro, United States

Soohyun Cho, Assistant Professor, Rutgers University, United States

Subhajyoti Bandyopadhyay, Professor, University of Florida, United States

Arunava Banerjee, Associate Professor, University of Florida, United States

The media industry has seen a major shift in the past decade with the increase in digital platforms. These digital platforms have challenged traditional broadcasting channels on how the content and services are provided. In this research, we discuss how the business model has evolved and analyze different revenue models.

115-1614 Pricing Strategies for Multi-Channel Liquidation

Avinash Geda, Assistant Professor, University of North Carolina Wilmington, United States

Arunima Chhikara, Assistant Professor, University of Kansas, United States

Nazli Turken, Assistant Professor, Johns Hopkins University, United States

Janice Carrillo, Professor, University of Florida, United States

This work offers insights into pricing and channel strategy to a multi-channel firm facing bankruptcy and considering inventory-liquidation. We also analyze consumer surplus under each liquidation strategy. We conclude by considering the impact of a local competitor firm in the offline market on the liquidating policies of the bankrupt firm.

Invited Session

485	Thursday, 08:00 AM - 09:30 AM, Barrel Spring 2	Track: Procurement and Supplier Management
	Invited Session: Procurement and supply management of pharmaceuticals	
	Chair(s): Kostas Selviaridis Harwin De Vries	

115-0405 Optimizing Policies for National Medicine Stockpiles

Harwin De Vries, Assistant Professor, Rotterdam School of Management, Netherlands

Stef Lemmens, Assistant Professor, Erasmus University Rotterdam, Netherlands

Europe and the US face a worsening problem of medicine shortages. In response, countries are designing policies that oblige manufacturers or wholesalers to stockpile X months of demand for essential medicines. We study the question how to design such policy, trading off cost, complexity, and impact (on medicine shortages).

115-0409 Contracting for resilience in medicine supply chains

Kostas Selviaridis, Associate Professor, Lancaster University, United Kingdom

Nonhlanhla Dube, Lecturer, Lancaster University, United Kingdom

Medicine shortages are a pressing problem internationally with negative effects on patient treatment outcomes and costs of care. The pandemic exacerbated these challenges, creating a sense of urgency to reform medicine procurement systems. We explore how changing tendering and contracting practices can help build resilient medicine supply chains.

115-0412 A global review of medicine shortages reporting systems (MSRS): analysing access and sustainability

Liz Breen, Professor, University of Bradford, United Kingdom

Emilia Vann Yaroson, Lecturer, University of Huddersfield, United Kingdom

Gemma Quinn, Associate Professor, University of Bradford, United Kingdom

The supply of medicine is a common challenge among healthcare systems globally. One way of addressing this issue is to implement a reporting system. It requires stakeholders to report issues with medicine supply and provide early signals. This study explored how these MSRS can enhance medicine access and ensure sustainability.

Contributed Session

487	Thursday, 08:00 AM - 09:30 AM, Regency Ballroom Q	Track: Revenue Management and Pricing
	Contributed Session: New Methods and Applications in Revenue Management	
	Chair(s): Mengzhenyu Zhang Farbod Ekbatani	

115-0457 Attribute-based Pricing: A Novel Formulation and Convergent Algorithms

Mengzhenyu Zhang, Assistant Professor, UCL School of Management, United Kingdom

Chris Ryan, Associate Professor, University of British Columbia, Canada

Thursday, 08:00 AM - 09:30 AM

Wei Sun, Research Staff Member, IBM Research, United States
Shiva Subramanian, Research Staff Member, IBM Research, United States
Markus Ettl, Manager, IBM Research, United States

Attribute-based pricing---giving a price to potential product attributes individually and allowing customers to choose the attributes that form the final product---has been shown to improve customer satisfaction. We consider the problem of finding optimal attribute prices to maximize the expected revenue of a monopolist seller.

115-1547 Simultaneous or Delayed: Optimal Strategy for Movie Release on OTT

Megha Sharma, Associate Professor, Indian Institute of Management Calcutta, India
Raunak Joshi, Student, Indian Institute of Management Calcutta, India
Sumanta Basu, Professor, Indian Institute of Management Calcutta, India
Soumyakanti Chakraborty, Associate Professor, Indian Institute of Management Calcutta, India
Indranil Bose, Professor, Indian Institute of Management Ahmedabad, India

We determine the optimal time to release movies in theaters and Over-the-top platforms. An early OTT release cannibalises the theater revenue while a late release reduces the movie's attractiveness. The tradeoff has become more important in recent times when many production houses have launched their OTTs.

115-1772 Operational Data Analytics: A Framework for Consumer Choice Modeling

Qi Feng, Professor, Purdue University, United States
George Shanthikumar, Professor, Purdue University, United States
Mengying Xue, Associate Professor, University of Science and Technology of China, China

An operational data analytics (ODA) framework is presented to estimate the general consumer choice model using data. This framework, generalizing the existing estimation methods for specific structural models, strikes a delicate balance between the (likely imprecise) structural knowledge and the data.

115-2075 Online Resource Allocation with Buyback: Optimal Algorithms via Primal-Dual

Farbod Ekbatani, Student, University of Chicago, United States
Yiding Feng, Post Doc/Researcher, Microsoft Research, United States
Rad Niazadeh, Assistant Professor, University of Chicago, United States

We study two-sided fractional online allocations with buyback, in which pre-allocated resources can be recalled at a cost proportional to the weight at which they were allocated at the first place. We characterize the optimal competitive ratio for this problem in all parameter regimes by designing primal-dual algorithms.

Contributed Session

489	Thursday, 08:00 AM - 09:30 AM, Regency Ballroom P	Track: Disruptive Technologies and Operations Management
	Contributed Session: Miscellaneous Topics in OM	
	Chair(s): Charles Wang	

115-0016 Are Bike-Sharing Platforms Complementing or Substituting Public Transit? An Empirical Investigation in the United States

Ecem Basak, Assistant Professor, Baruch College, United States
İlçagatay Iris, Assistant Professor, University of Liverpool, United Kingdom

A priori relationship between the entry of bike-sharing platforms and public transit demand is not straightforward and open to debate. In this study, we empirically examine the complementary and substitution effects of bike-sharing platforms on public transit. We also examine the factors that might amplify the strength of the effect.

115-0621 Mitigating upstream disruptions: Effects of extended inventories and power structures in buyer-supplier-sub-supplier triads

Christian Durach, Professor, ESCP EUROPE, Germany
Yuri Peers, Assistant Professor, Vrije Universiteit Amsterdam, Netherlands
Yimin Wang, Associate Professor, Arizona State University Tempe, United States

We studied the relevance of inventories and dependencies in buyer-supplier-sub-supplier triads after an upstream disruption event. Data was analyzed from triads that were affected at their upper end by the 2011 Japanese earthquake. Results show: triad inventories matter to buyers, joint orchestration is needed, and power is an important moderator.

115-1226 Do investments in business intelligence technologies improve firm performance?

Khadija Ajmal, Student, University at Buffalo, SUNY, United States
Charles Wang, Associate Professor, Suny At Buffalo, United States
Nallan Suresh, Professor, Suny At Buffalo, United States
Aditya Vedantam, Assistant Professor, University of Buffalo, United States

Using an event study methodology, this research empirically tests the influence of firms' investments in big data, machine learning, artificial intelligence, and cloud computing on their long-term operational and financial performance. Results show a significant positive effect of business intelligence investments on ROA, ROE, and Tobin Q of sample firms.

115-1400 Digital Transformation And Operational Performance: The Roles Of Transformation Management Capabilities

Peter Darko, Student, Kwame Nkrumah University of Science and Technology, Ghana
Francis Baidoo, Associate Professor, University of Texas Rio Grande Valley, United States
David Asamoah, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana

Thursday, 08:00 AM - 09:30 AM

Kwame Kwateng, Associate Professor, Kwame Nkrumah University of Science and Technology, Ghana

John Marfo, Lecturer, Kwame Nkrumah University of Science and Technology, Ghana

Digital transformation has resulted in favorable business transformations and new opportunities. However, huge difficulties have surfaced as businesses attempt to ignite DT throughout their organizations. This study seeks to examine the relationship between DT and Operational performance and the mediating effect of the Transformation management capabilities on this relationship.

Thursday, 09:45 AM - 11:15 AM

Contributed Session

497

Thursday, 09:45 AM - 11:15 AM, Celebration 2

Track: Energy and Natural Resource Management

Contributed Session: Environmental Governance and Policy

Chair(s): Zana Cranmer

115-0104 A Decision Support Tool for Local Climate Action

Zana Cranmer, Assistant Professor, Bentley University, United States

This work presents an open-source scenario modeling tool intended to provide local governments and community groups with a rigorous and easy to use tool for prioritizing local climate initiatives according to multiple criteria. Local governments play a crucial role climate action; however, few limited tools are available to support them.

115-1579 What criteria are considered in decision-making in biogas production projects from organic waste?

Daniela Yamaji, Student, Londrina State University, Brazil

Saulo Amâncio-Vieira, Professor, Londrina State University, Brazil

Claudia Luengo, Student, Londrina State University, Brazil

Eduardo Contani, Professor, Londrina State University, Brazil

Reginaldo Fidelis, Professor, UTFPR-Campus Londrina, Brazil

The main objective is to find the criteria considered in decision-making in biogas projects from organic waste. First, we carry out an integrative review of the literature on this topic, then we identify the decision criteria in these projects. Thus, we hope to build a multicriteria decision model for biogas.

Invited Session

498

Thursday, 09:45 AM - 11:15 AM, Celebration 3

Track: Healthcare Operations Management

Invited Session: Pharmaceutical operations and supply chain

Chair(s): Rachna Shah Hanu Tyagi

115-0095 Impact of FDA policy on Drug Shortages

Parshuram Hotkar, Assistant Professor, Indian School of Business, India

Diwakar Gupta, Professor, University of Texas Austin, United States

Frequent drug shortage have impacted healthcare and economy for past few years. We study the role of information sharing through the FDASIA act on the shortages. We find that information availability substitutes the capacity investment for certain drugs leading to severe drug shortage, while improving shortage duration for other drugs.

115-0698 Balancing Speed-Safety Tradeoffs in the Drug Approval Process

Hanu Tyagi, Student, University of Minnesota, United States

Rachna Shah, Associate Professor, University of Minnesota, United States

Getting new products to market fast is advantageous. However, increased speed could negatively impact product safety. We study the speed-safety tradeoff in the context of the US pharmaceutical industry. We compile a unique dataset of drugs approved by the FDA and find that speed negatively impacts safety.

115-1162 Time to Recover Market Share: Lasting Effects of Supply Chain Disruptions on Firm Performance

Minje Park, Post Doc/Researcher, Columbia University, United States

Anita Carson, Professor, Boston University, United States

Rena Conti, Professor, Boston University, United States

As supply chain disruptions frequently occur in today's globalized supply chains, understanding their impact is important. We study the long-term effects of supply chain disruptions on firms' market share. We focus on the generic drug industry where supply chain disruptions have been recurrent in the last decade.

Invited Session

500

Thursday, 09:45 AM - 11:15 AM, Celebration 5

Track: Healthcare Analytics

Invited Session: Healthcare Decision Making

Chair(s): Kimia Ghobadi

115-0262 Opioid Epidemic: Evidence-Based Management of Pain Treatments Using Longitudinal Machine Learning

Boloori Alireza, Assistant Professor, University of Washington, Tacoma, United States

Soroush Saghaian, Assistant Professor, Harvard University, United States

Stephen Traub, Department of Emergency Medicine, Brown University, United States

Medical guidelines have urged healthcare providers to lessen opioid prescriptions. This, however, could negatively affect patients who suffer from pain symptoms. Utilizing claims data, we analyze the trade-off between the side effects and benefits of using pain treatments, and provide an analytical framework that helps physicians in prescribing these treatments. Opioid

115-0727 Data-Driven Approach for Operating Room-to-Downstream Elective Surgery Planning Under Uncertainty

Karmel Shehadeh, Assistant Professor, Lehigh University, United States

Thursday, 09:45 AM - 11:15 AM

Man Yiu Tsang, Student, Lehigh University, United States

Rema Padman, Professor, Carnegie Mellon University, United States

Arman Kilic, Associate professor of surgery, Medical University of South Carolina, United States

We propose a new elective surgery assignment, sequencing, and scheduling problem (ESASSP), involving multiple ORs and downstream recovery units (ICU and ward) and methodologies for solving the ESASSP. Numerical experiments based on real surgery data are used to compare the proposed methodologies and illustrate the potential for impact in practice.

115-1618 Data-driven Dynamic Coordination of Exams in a Radiology Practice

Saharnaz Mehrani, Assistant Professor, Florida Atlantic University, United States

Miao Bai, Assistant Professor, University of Connecticut, United States

Carlos Cardonha, Assistant Professor, University of Connecticut, School of Bus, United States

David Bergman, Associate Professor, University of Connecticut, United States

We study dynamic coordination of exams in a radiology practice with multiple classes of patients with the goal to minimize patients waiting cost. We adopt a reinforcement learning method to develop data-driven policies for this problem. We show the performance of our proposed policies on real-world data.

115-2110 Would a better healthcare access reduce Covid-19 mortality measures?

Fardin Ganjkanloo, Student, Johns Hopkins University, United States

Farzin Ahmadi, Student, Civil and Systems Engineering, United States

Kimia Ghobadi, Assistant Professor, Johns Hopkins University, United States

We examine COVID-19 mortality measures in US counties and particularly focus on the pandemic progression, societal response, vaccination uptake, and vaccine efficacy for variants. Our analyses indicate correlations between mortality measures and various factors, including access to acute resources, which can be improved through optimal resource allocation.

Invited Session

501	Thursday, 09:45 AM - 11:15 AM, Celebration 6	Track: Healthcare Analytics
	Invited Session: Operational and Behavioral Decisions in Healthcare	
	Chair(s): Sriram Venkataraman	

115-0175 Repeated Principal-Agent Games with Unobserved Rewards of Imperfect-Knowledge Agents

Ilgin Dogan, Student, University of California, Berkeley, United States

Anil Aswani, Associate Professor, University of California Berkeley, United States

Max Shen, Professor, University of California Berkeley, United States

We explore a challenging scenario of repeated games which is applicable to personalized medical adherence incentives. We design a consistent estimator and data-driven policies for two strategic players: a self-interested agent tackling a multi-armed bandit with non-parametric rewards, and a principal training a parallel algorithm by solely observing agent's actions.

115-0209 Physician Discretion and Patient Pick-up: How Familiarity Encourages Multitasking in the Emergency Department

Robert Niewoehner, Assistant Professor, Kelley School of Business, United States

Bradley Staats, Professor, University of North Carolina Chapel Hill, United States

Diwas KC, Professor, Emory University, United States

Recent operations research acknowledges that agents in our operational systems have discretion to make decisions. Modeling this behavior requires assumptions, but these assumptions may induce gaps between models and real-world observations. Deliberate system design can transform problematic deviance into productive discretion.

115-0386 Chronic disease management under different payment systems and the promise of mHealth

Balaraman Rajan, Associate Professor, California State University East Bay, United States

Arvind Sainathan, Associate Professor, NEOMA Business School, France

Saligrama Agnihotri, Professor, Binghamton University, United States

Leon Cui, Assistant Professor, Binghamton University, United States

Mobile health (mHealth) technology is promising to provide efficient, effective, and patient-centred healthcare to manage chronic conditions. However, the economics associated with mHealth is not well understood. In a chronic care clinical practice setting, we investigate fee-for-service and capitation payment schemes, and explore their performance under office-visit and mHealth modes.

115-1549 Certificate of Need and case complexity in hospital operations: Examining cost and quality tradeoffs

Jonathan Phares, Assistant Professor, Iowa State University, United States

David Dobrzykowski, Associate Professor, University of Arkansas - Fayetteville, United States

Brian Fugate, Associate Professor, University of Arkansas - Fayetteville, United States

Certificate of Need (CON) laws have produced a considerable practical and academic debate regarding its effects on hospital operations. Using hybrid econometric models with data from multiple sources accounting for 3,458 acute-care hospitals, we examine the effects of CON and case mix index on hospital cost and quality performance.

115-1668 Scheduling Smarter: Staffing Decision Impact on Nurse-Aide Turnover

Kevin Mayo, Assistant Professor, Washington State University, United States

Eric Webb, Assistant Professor, University of Cincinnati, United States

George Ball, Associate Professor, Indiana University Bloomington, United States

Thursday, 09:45 AM - 11:15 AM

Kurt Bretthauer, Professor, Indiana University, United States

High turnover rates exacerbates the existing shortage of caregivers. We examine both how much and with whom to schedule part-time Certified Nursing Assistants (CNAs) in long-term nursing facilities. Using novel data we identify two scheduling levers, reducing coworker variability and optimal hours, managers can use to reduce turnover.

Contributed Session

503

Thursday, 09:45 AM - 11:15 AM, Celebration 8

Track: Sustainable Operations Management

Contributed Session: Use of Technologies in Sustainable Operations

Chair(s): Sara Behdad

115-0983 Impact of Blockchain-driven Sustainable Supply Chain Transparency on Supplier Selection: Insights from Choice-based Conjoint Experiment

Sukrit Vinayavekhin, Student, Bayes Business School, United Kingdom

Aneesh Banerjee, Reader, City University of London, United Kingdom

Feng Li, Professor, City, University of London, United Kingdom

Building on concepts in inter-organisational trust and information economics, this research examines how buyers assess the importance of various attributes of information voluntarily disclosed by suppliers. It also incorporates the factors associated with blockchain technology. The choice-based conjoint experiment was sent to collect quantitative and qualitative responses from actual buyers.

115-1005 An Artificial Intelligence-based Framework to Assess Product Repairability

Haoyu Liao, Student, University of Florida, United States

Sara Behdad, Associate Professor, University of Florida, United States

Product repairability is essential for extending product lifespan towards the circular economy. This work proposes an Artificial Intelligence-based framework for evaluating product repairability using unsupervised learning and transfer learning. The proposed framework has been applied to a dataset of smartphone teardown images from different brands.

115-1887 Green is not an option: Foodservice 4.0 for Green Supply Chain Resilience

Zenon Michaelides, Reader, Manchester Metropolitan University (MMU), United Kingdom

Roula Michaelides, Reader, Manchester Metropolitan University, United Kingdom

Santosh Maruti Salunkhe, Post Doc/Researcher, Manchester Metropolitan University (MMU), United Kingdom

Overcoming the ripple effects of the pandemic foodservice SMEs, primarily dependent on logistics, are now facing rising fuel-costs and unachievable environmental targets. This paper will explore foodservice 4.0 technologies to mitigate trade-offs and promote resilience in sustainable growth.

115-2040 Supporting Supply Chain Sustainability through Digital Technologies in Transport SMEs

Wolfgang Kersten, Professor, Hamburg University of Technology, Germany

Lasse Ladewig, Student, Hamburg University of Technology, Germany

Hannah-Deborah Harbich, Student, Hamburg University of Technology, Germany

Beverly Lege (geb. Grafe), Student, Hamburg University of Technology, Germany

Supply chains have a major impact on the sustainability performance of companies. Our research focuses on how digital technologies can contribute to supply chain sustainability in certain areas and what issues arise and need to be addressed. The analysis is based on different research projects involving small and medium-sized enterprises.

Invited Session

506

Thursday, 09:45 AM - 11:15 AM, Celebration 11

Track: Manufacturing Operations

Invited Session: Manufacturing Operations

Chair(s): Mehdi Farahani

115-1079 Asymptotic Optimality of Open-Loop Policies for Lost-Sales Inventory Models

Xingyu Bai, Student, University of Illinois Urbana-Champaign, United States

We consider lost-sales inventory models with stochastic lead times. In the model with divisible products, we show that constant-order policies are asymptotically optimal as the lead time increases. In the model with indivisible products, we show that bracket policies are asymptotically optimal as the lead time increases.

115-1498 Equity-Based Critical Infrastructure Investments

Milad Baghersad, Assistant Professor, Florida Atlantic University, United States

Christopher Zobel, Professor, Virginia Tech, United States

Ravi Behara, Professor, Florida Atlantic University, United States

In many countries, like the U.S., critical infrastructures face the problem of aging and require significant improvements to continue their services for the next decades. In this study, we develop different deterministic models to address the inequity problem in prioritizing stormwater improvement projects.

115-1566 Taking advantage of a supplier's political instability?

Jafar Namdar, Post Doc/Researcher, Massachusetts Institute of Technology, United States

Milad Baghersad, Assistant Professor, Florida Atlantic University, United States

Sachin Modi, Professor, Villanova University, United States

Thursday, 09:45 AM - 11:15 AM

This paper investigates how sourcing from suppliers in politically unstable countries impacts focal firms' performance. We show that political instability has a slight, curvilinear relationship with firms' performance. Moreover, this nonlinear relationship gets pronounced and reversed for firms operating in durable goods industries.

Contributed Session

507	Thursday, 09:45 AM - 11:15 AM, Celebration 12	Track: Humanitarian Operations and Crisis Management
	Contributed Session: Pandemic-Vaccine Research	
	Chair(s): Mike Veatch	

115-0078 Covid-19 Policy Failure and Success: A configurational Perspective

Jomon Paul, Professor, Kennesaw State University, United States
Aniruddha Bagchi, Professor, Kennesaw State University, United States
Xinfang Wang, Professor, Georgia Southern University, United States

We adopt a configurational perspective to analyze the complexity of Covid-19 policies, which must balance public health outcomes and economic ones. Through a fuzzy-set qualitative comparative analysis (fsQCA), we reveal multiple, nonlinear combinations of the policies leading to failure and success of health and economic outcomes, providing a multiple-policy strategy.

115-0099 Optimizing Vaccine Distribution in Developing Countries under Natural Disaster Risk

Bonn Kleiford Seranilla, Student, University of Luxembourg, Luxembourg
Nils Löhndorf, Associate Professor, University of Luxembourg, Luxembourg

We propose a multistage stochastic facility location model that allows policy-makers to choose COVID-19 vaccination facilities while accounting for possible facility failure due to natural disasters. Recommendations based on this model were implemented following a collaboration with a flood-prone city in the Philippines posting highest vaccination rate in the region.

115-1611 Humanitarian Operations Standards for Epidemics: A Case in Japan

Yoshiki MATSUI, Professor, The Open University of Japan, Japan
Minh Nguyen, Lecturer, University of Economics, Ho Chi Minh City, Vietnam

This study aims to investigate the current standards for humanitarian operations in Japan to respond to disasters, specifically focusing on the case of COVID-19. The case of Japan will be compared with humanitarian operations in other countries to provide insights into strengths and weakness of humanitarian operations in different countries.

115-1959 International Vaccine Allocation: An Optimization Framework

Mike Veatch, Professor, Gordon College, United States
Abraham Holleran, Student, Gordon College, United States
Susan Martonosi, Professor, Harvey Mudd College, United States

Several vaccine donation arguments were given regarding COVID-19: altruism, reducing transmission across borders, and reducing the emergence of variants. A multi-area SEIR optimization model, with variants delayed by vaccination, identifies scenarios where donation does or does not improve donor country outcomes. Variants emerge from unvaccinated cases in low-income countries.

Invited Session

508	Thursday, 09:45 AM - 11:15 AM, Celebration 13	Track: Humanitarian Operations and Crisis Management
	Invited Session: Humanitarian Operations & SDGs	
	Chair(s): Adriana Leiras	

115-0822 Mapping the interlinkages between Humanitarian Operations and SDGs

Maria Angélica Gomes da Silva, Student, Pontifical Catholic University of Rio de Janeiro, Brazil
Luiza Cunha, Post Doc/Researcher, Universidade de São Paulo, Brazil
Adriana Leiras, Professor, Pontifícia Universidade Católica do Rio de Janeiro - PUC-Rio, Brazil

Humanitarian Operations (HO) aimed at minimizing the impact of disasters present synergies and tradeoffs with the Sustainable Development Goals (SDGs), focused on achieving a sustainable future for all. This research aims to analyze the interlinkages between the HO and the SDGs by representing relations through a system dynamics model.

115-1527 Forming a humanitarian coalition when time is short

Iman Parsa, Post Doc/Researcher, INSEAD, France
Mahyar Eftekhari, Associate Professor, Arizona State University Tempe, United States
Scott Webster, Professor, Arizona State University Tempe, United States

More coordination is emphasized in the UN sustainable development goals. Yet, in humanitarian operations, a lack of coordinated response remains a problem. We develop a non-cooperative game theoretical model to analyze horizontal coordination among humanitarian organizations, highlighting the structural barriers to higher levels of coordination.

Contributed Session**509**

Thursday, 09:45 AM - 11:15 AM, Celebration 14

Track: Service Operations

Contributed Session: **Service Economics**

Chair(s): Iman Dayarian

115-0914 Unifying model of conjoint analysis and MCDM : Focused on Music Streaming Services

Sangwon Eum, Student, Korea University, South Korea

Hosun Rhim, Professor, Korea University, South Korea

Jeunghyun Kim, Assistant Professor, Korea University, South Korea

EunSu Lee, Assistant Professor, New Jersey City University, United States

Zili Xu, Student, Korea University, South Korea

We develop a unifying model of conjoint analysis and MCDM models. The conjoint analysis model is divided into multiple subproblems to reduce the number of attributes. Attributes for conjoint analysis are identified by text mining tools. The subproblems are integrated into the original problems using MCDM.

115-1130 Equitable Workload Allocation in Vehicle Routing Problem with Heterogeneous Drivers

Iman Dayarian, Assistant Professor, University of Alabama, United States

Vahid Mahmoodian, Student, University of South Florida, United States

Hadi Charkhgard, Assistant Professor, University of South Florida, United States

Fairness considerations in the private logistics-service sector are growing for an equitable workload allocation among service providers. This is more crucial when employing crowdsourced workforce considering their inherent heterogeneity. This research aims at creating a decision-support tool to strike a balance between efficiency and equitable workload allocation in crowdshipping settings.

115-1174 A study on the profitability of proactive services: The event study method

Chongwoo Park, Student, Korea University, South Korea

Hosun Rhim, Professor, Korea University, South Korea

Youngmi Han, Lecturer, Korea University, South Korea

We introduce the concept of proactive services which includes three different concepts: service guarantee, preventive service, and condition-based predictive service. We examine the profitability of proactive services against traditional services by conducting the event study.

115-1455 Production and Inventory Strategies under Centralized Auction Scheme

Guohua Wan, Professor, Shanghai Jiao Tong University, China

Tong Wang, Associate Professor, Shanghai Jiao Tong University, China

Nani Zhou, Student, Shanghai Jiao Tong University, China

We study three different production and inventory strategies of pharmaceutical manufacturers under centralized auction scheme. We characterize and analyze optimal strategies under centralized auction scheme. We then conduct numerical experiments to compute the loss of social welfare under different strategies, shedding lights on design of the pharmacy auction scheme.

Invited Session**511**

Thursday, 09:45 AM - 11:15 AM, Coral Spring 1

Track: Emerging Topics in Operations Management

Invited Session: **Empirical Research in Social and Sustainable Operations**

Chair(s): Amrita Kundu

115-0456 Racial and Gender Biases in Customer Satisfaction Surveys: Evidence from the Restaurant Industry

Masoud Kamalahmadi, Assistant Professor, Miami Herbert Business School, United States

Qiuping Yu, Associate Professor, Georgetown University, United States

Yong-Pin Zhou, Professor, University of Washington, United States

We explore racial and gender biases in customer ratings of restaurant servers using 260,000 customer satisfaction surveys and 1.5 million transactions at a U.S. national casual dining restaurant chain. We find strong evidence consistent with customer biases against female and racial minority servers. We discuss the mechanisms of the biases.

115-1779 Closing the Gender Gap in Performance of Small Firms by Building Resilience: Evidence from Uganda

Amrita Kundu, Assistant Professor, Georgetown University, United States

Kamalini Ramdas, Professor, London Business School, United Kingdom

Gender gap in performance of small firms is well documented in the literature, but the reasons are not well understood. We investigate the role of firm-specific disruptions in explaining the gender gap in performance and whether this gender gap can be reduced by building firm resilience.

115-1826 Economics of Grid-Scale Energy Storage in Wholesale Electricity Markets

Omer Karaduman, Assistant Professor, Stanford University, United States

I investigate private incentives for operating and investing in grid-scale energy storage and the need for policies that complement investments in renewables with encouraging energy storage. I build a new dynamic structural equilibrium framework to quantify the effects of grid-scale energy storage and apply it to study South Australian Market.

Invited Session**513**

Thursday, 09:45 AM - 11:15 AM, Blue Spring 1

Track: Supply Chain Risk Management

Invited Session: **Cross-functional Approaches to Supply Chain Risks: Operations & Finance**

Chair(s): Ye Liu

115-0800 Facilitating upstream supply chain resilience with buyer intermediation in supplier financing

Sairam Sriraman, Student, TUM School of Management, Germany
 David Wuttke, Assistant Professor, Technische Universität München, Germany
 Andreas Gernert, Assistant Professor, Kuehne Logistics University, Germany
 Volodymyr Babich, Professor, Georgetown University, United States

Buyers can increase supply chain resilience by supporting their suppliers with supply chain finance. To that end, we use a game theoretical model to examine how buyer intermediation in supplier finance affects the supplier's resilience investment. We examine the impact of decentralized decision making and market imperfections.

115-1337 Shareholder Scrutiny, Capacity Investment, and Inventory Level

Karca Aral, Assistant Professor, Syracuse University, United States
 Erasmo Giambona, Professor, Syracuse University, United States
 Luk Van Wassenhove, Professor, INSEAD, France

We study the effect of shareholder scrutiny and managerial time-horizon on two key intertwined operations decisions: capacity investment and inventory levels in a quasi-natural experimental setup. Our results suggest that capacity and inventory levels may be suppressed due to managerial risks involved.

115-1511 Utilizing Machine Learning to Manage a Hog Farm's Operational Decisions

Panos Kouvelis, Professor, Washington University in St. Louis, United States
 Danko Turcic, Associate Professor, Anderson School of Management, United States
 Ye Liu, Student, Washington University in St. Louis, United States

We study a data-driven model of a hog farm. Based on the prevailing market prices and inventory availability, a risk-averse farmer must periodically decide what hogs to sell and what hedges to implement while having to fulfill a contract with a meatpacker. Our optimal policy is derived through machine learning.

Invited Session**517**

Thursday, 09:45 AM - 11:15 AM, Barrel Spring 1

Track: POM-Marketing Interface

Invited Session: **Ad load, consumer privacy, and product subscriptions**

Chair(s): Xiaoyu Wang

115-0821 Estimating Treatment Effects of Ad Load on Long-Term Outcome

Yueyang Zhong, Student, Booth School of Business, United States

We estimate the causal effect of short-term user engagement on the long-term ad revenue using a causal reinforcement learning framework where we use A/B testing as instrumental variables. We test our algorithm that dynamically controls the ad load in our partner firm's auction simulator, which is shown to perform well.

115-0898 The Effects of Diversity in Algorithmic Recommendations on Digital Content Consumption: A Field Experiment

Guangying Chen, Student, Washington University in St. Louis, United States
 Tat Chan, Professor, Washington University in St. Louis, United States
 Dennis Zhang, Associate Professor, Washington University in St. Louis, United States
 Senmao Liu, Data Scientist, NetEase Cloud Music, Inc., China
 Yuxiang Wu, Data Scientist, NetEase Cloud Music, Inc., China

We conducted a field experiment on a music streaming platform to study the effects of content diversity in personalized recommendations. Overall, recommendations with higher topic diversity did not affect users' consumption diversity but lowered their consumption level. However, higher recommendation diversity boosted active users' consumption diversity without hurting consumption level.

115-0994 Consumer Privacy in Online Retail Supply Chains

Xiaoyu Wang, Student, Washington University in St. Louis, United States
 Fasheng Xu, Assistant Professor, Syracuse University, United States
 Fuqiang Zhang, Professor, Washington University St Louis, United States

This paper studies the implications of newly adopted privacy policies such as the GDPR for online retail supply chains consisting of a retailer and a supplier. We find that, although the GDPR is designed to protect consumer privacy, it may actually hurt consumer surplus while benefiting the retailer.

115-1015 Product Subscriptions, Price Versus Non-Price Messages and Customer Churn: Evidence from a Field Experiment

Kirthi Kalyanam, Professor, Santa Clara University, United States
 Raphael Thomadsen, Professor, Washington University in St. Louis, United States
 Nan Zhao, Student, Washington University in St. Louis, United States

Thursday, 09:45 AM - 11:15 AM

We examine the relative performance of price versus non-price messaging in attracting and retaining customers for a product subscription service. Our results from a randomized email campaign show that nonprice messages have superior performance in retention. We also explore HTE of creatives to provide a better match and reduce churn.

115-1020 Consumer Response to Puffery: Empirical Evidence From A Cellular Network Upgrade Advertising

YI Zhu, Student, University of Minnesota, United States

Jason Chan, Associate Professor, University of Minnesota, United States

Xuan Bi, Assistant Professor, University of Minnesota, United States

Yue Guo, Associate Professor, Southern University of Science and Technology, China

Jun Wu, Associate Professor, Beijing University of Posts and Telecommunications, China

We empirically study consumer response to advertising puffery. We find consumers respond negatively to puffery, and the responses vary across product attributes and consumer characteristics. Our findings inform companies of adverse outcomes of using puffery and highlight the importance of adequate product and service capacity to avoiding negative consumer response.

Invited Session

518

Thursday, 09:45 AM - 11:15 AM, Barrel Spring 2

Track: Procurement and Supplier Management

Invited Session: Human Behavior in Supplier Management

Chair(s): Jan Fransoo

115-0877 Supplying Cash-Constrained Retailers: Understanding Shopkeeper Behavior at the Bottom of the Pyramid

Sebastian Villa, Assistant Professor, University of New Mexico, United States

Rafael Escamilla, Student, Tilburg University, Netherlands

Jan Fransoo, Professor, Tilburg University, Netherlands

Nanostores are the source of income for millions of shopkeepers in developing countries. We conduct an empirical and a behavioral study to explain how and when suppliers' visit frequency, product margins, and shopkeepers' cash constraints influence shopkeepers' orders. We provide managerial recommendations for supplying cash-constrained shopkeepers.

115-0934 How to Account for Behavioral Newsvendors: The Robust Buyback Contract with Response Uncertainty

Christina Imdahl, Assistant Professor, Eindhoven University of Technology, Netherlands

Kai Hoberg, Professor, Kuehne Logistics University, Germany

Michael Becker-Peth, Assistant Professor, Rotterdam School of Management, Netherlands

Normative (expected profit maximizing) theory assumes any decision-maker to be fully rational while in fact, decision-makers deviate from the theoretical optimal response. We propose robust optimization to obtain contract parameters that are robust to deviations from normative behavior. The approach works without any assumptions on the distribution of the response.

115-1220 Understanding the Impact of Sales Visit Inconsistency on the Ordering Behavior of Nanostores

Simone Balvers, Student, Tilburg University, Netherlands

Eirini Spiliotopoulou, Assistant Professor, Tilburg University, Netherlands

Jan Fransoo, Professor, Tilburg University, Netherlands

Sangho Chae, Assistant Professor, Tilburg University, Netherlands

Nanostores, or mom-and-pop stores, rely on sales agents to replenish their inventory. When sales agents visit stores inconsistently, uncertainty arises about the time period for which to order. We define this uncertainty as review period uncertainty. Using an experimental design, we analyze the impact of this uncertainty on ordering behavior.

115-1688 Managing Risk Tradeoffs: Sustainability and Diversification Strategies of Procurement Managers

Brent Moritz, Associate Professor, Penn State University University Park, United States

Behnam Fahimnia, Professor, The University of Sydney, Australia

Andrew Collins, Senior Lecturer, University of Sydney, Australia

We investigate how practicing managers evaluate environmental and social sustainability relative to cost and supply diversification. Using a discrete choice experiment, managers resisted selecting new suppliers that had poorer sustainability profiles. They wanted increased country diversification, and were willing to incur a slight cost increase for better sustainability.
